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Contents.

Diary Dates

Annual Conference, 21-23 April 1995

The Three Tuns Hotel, Elvet, Durham City

[redacted]

Please send bookings to Dr L.Howden,
36,York Place, Edinburgh.

Wednesday,17 May, 1995.

At the Pharmaceutical Society's house, Lambeth.
"Seventeenth Century Medicine in Russia"
by Dr. Maria V. Unkovskaya.

Obituary.

It is with sadness that we have to record the death of Douglas Harrod, BSc, FPS, FLS, one of our auditors for so many years, on 2 October 1994. He was responsible for examining, naming and cataloguing all those crude drugs still existing in the famous materia medica cabinet of Messrs. Corbyn & Stacey of 300, High Holborn, London, given to the Pharmaceutical Society in 1908 by Mr S.Lloyd Stacey.

Members' Activities.

Mr Eldon Cagle of 4426 Monaco, San Antonio, Texas, 78218, has very kindly given us two slide sets on drug jars and prescription bottles. Mr Cagle has a particular interest in pharmacy practice in Colonial America, and is asking if any of our members could supply him with information. [One imagines it was very similar to that found in provincial England at the same period. Ed.]

Mr Mervyn Madge is still in demand in the West Country for his talk on the activities of infamous poisoners. Another of his lectures, "Life and conditions in the Tamar Valley in the 18th. and 19th. centuries" relates that during the cholera epidemic, cattle were driven through the streets of Callington, Cornwall so that "their sweet breath might purify the air." It seems that when Mervyn is not talking he is reading and finds many a snippet of pharmaceutical interest. Recently he has been roaming by proxy the deserts of North Yemen, formerly the kingdom of Sabae or Sheba. The area, he tells us was " a great source of herbs and spices due to the damning of the river Adhanat. They were mainly exported by sea until the taming of the wild camel in about 1,000 BC after which an overland route developed. Balkis, Queen of Sheba, journeyed by this Spice Route to confer with King Solomon in Jerusalem bringing gifts of balsam bushes. The Adhanat dam burst in 542 BC and the land reverted to desert." [An excellent book on the subject is Freya Stark's *The Southern Gates of Arabia*, (London, 1936, Murray) in which this renowned traveller traversed part of "the great frankincense road". This road was well established by the 13th. century BC., and the monopoly of the Mineans (and later the Sabaeans and Himyarites), "through whose country is the sole transit for myrrh and frankincense along a single narrow road." Ed.]

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Can anybody help ?

Miss Samantha Middleton of the Bowes Museum, Barnard Castle, County Durham, has sent us photographs of a mortar, bearing the date 1668 and the initials I.(probably J.) R. and A., which they are anxious to identify.

DO'S AND DON'TS FOR COLLECTORS.

Caroline Reed

Many museums, like our own, have gone through a number of different phases of development and collecting priorities have changed accordingly. To the new curator, working through the chronological layers of acquisitions can be as fascinating as an archaeological dig. The objectives of the museum of the Pharmaceutical Society have changed radically in the 152 years since its foundation. From the outset one of the Society's major functions was to run a teaching establishment, the School of Pharmacy. The museum has its origins in the teaching collection of crude drug specimens accumulated and used by the school, but it soon gained a considerable symbolic and scientific significance for the founding members. In a prime position on the ground floor of the Society's house at Bloomsbury Square, it occupied three rooms by 1863 and in 1878 was described as "one of the most important and interesting aids to the study of materia medica in this or any country." In addition to reflecting the late nineteenth century scientific interest in the study and classification of crude drugs, the museum had grown to meet a national need for a reference collection to aid in identification and testing by comparison for drug adulteration. It was a source of pride to the Society and several catalogues and research papers were published during the curatorship, from 1872 - 1922, of Edward Morrell Holmes.

As pharmacognosy and the study of crude drug material took a less central role in pharmacy education, the importance of the Society's museum to the School of Pharmacy waned. When the school, as part of the University of London, moved to Brunswick Square in the 1950s, the museum remained in Bloomsbury Square. In the 1960s much of the original collection was transferred to the care of Bradford University, and later was again moved to form part of the Herbarium Collection at the Royal Botanic Gardens at Kew.

This transfer of the early collections did not mark the demise of the museum. A second string to its bow had been developing in the middle years of the century under the guiding hand of the Keeper from 1940 to 1968, Agnes Lothian. In the early period of the museum there had been little attempt to collect artefacts which reflected the history of pharmacy in any systematic way. There were a few mementoes, souvenirs and portraits from the early years of the Society which gradually came under the Keeper's care, but no consciously defined historical collection.

A change of emphasis began with the donation to the

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Society in 1938 of three eighteenth century English syrup jars. English tin glazed pottery, particularly the distinctive blue and white English delftware drug jars, were Agnes Lothian's greatest interest. During her years with the museum, she steadily built up the Society's collection in this field to be one of the strongest, and one of the most interesting, in the country.

She also built a valuable collection of prints, particularly eighteenth and nineteenth century caricatures, which provides a rich source of visual images of medicine in that period, particularly community medicine and pharmacy. Another important acquisition was the bequest of Ernest Saville Peck's very fine collection of bell metal mortars.

As well as this concentration on what might be turmed the 'art' side of pharmaceutical collecting, the museum also began to expand at this time its holdings relating to the social history of retail pharmacy and early industrial pharmacy. This aspect of the collections was further expanded under the direction of the Society's most recent curator, Kate Arnold Foster. There is now a very extensive range of objects characteristic of the traditional mid-nineteenth to mid-twentieth century pharmacy. As well as dispensing equipment, glass and ceramic storage containers, leech jars, specie jars and carboys, there are attractive and historically very interesting collections of advertising and display materials, proprietary medicines and druggists' sundries - indeed, all the paraphenalia of retail store and the domestic medicine chest.

Add to this a large photographic archive and you have, all in all, a somewhat daunting array of material for the Curator. At this point, I want to look at the major enemies of museum collections, by which I do not mean the obvious ones of theft, vandalism, infestation, fire and flood, but those things that can happen to objects in store or on display just at the time you think you are giving them the best of care. These may be summarised as bad handling, poor storage materials, light, uncontrolled temperature and relative humidity, and airborne pollution.

Bad Handling. People's awareness of the strengths and weaknesses of many of the objects that surround them can be amazing. Even once robust objects tend to become fragile with time and need to be handled with respect. Everyone's instinct when confronted with an unfamiliar tool is to find out how it works, but even simple machines like cork presses should never be casually operated before a very thorough inspection.

When moving objects loose parts like lids should always be detached or supported and nothing should ever be lifted by a part which might be weak, like a handle or rim. For most materials, and especially metals, gloves of thin latex, vinyl or cotton should always be worn.

Packing Materials. These too are very important. High acidity in picture mounts, packing tissue or cardboard boxes will transfer to the stored object, speeding up the processes of degradation. Great care has to be taken with plastic used for storage. Most commercially available polythenes and foams are not inert and will react with stored objects. They can be especially damaging to photographs. Inert, conservation-grade alternatives to all these can be found, although at a cost that usually makes the private collector demur. Acid-free tissue is every curator's standby and there are several firms supplying acid free boxes, envelopes, inert polyethylene foams etc.

Light. The damaging effects of light are well known. Photochemical change causes not only discoloration of paints, dyes and pigments but also weakens all cellulose materials such as paper, cotton or linen, and also animal products like leather, wool, silk and feathers.

All light is damaging, that at the short wavelength end of the spectrum especially so. For that reason much good can be done by eliminating the non-visible ultra violet light present in daylight and all electric lights by the use of UV absorbent films and filters on museum windows and around fluorescent tubes. Half the damage done on objects, however, is by light in the visible region. On all sensitive objects light levels need to be controlled. The recommended level for something as vulnerable as a hand coloured engraving is 50 lux. In a modern home or office this is almost impossible, but in a well designed museum setting, where the eye is given time to adjust and the object is well positioned, it can be perfectly acceptable. It is also important to appreciate that light damage is cumulative. Exposure at 50 lux for a year will do as much harm as 100 lux for six months.

Objects should never be subjected to direct sunlight even if UV filtered. I am afraid we have an example in the Pharmaceutical Society headquarters building of something approaching the worst you can do for your objects in this respect. Without very careful briefing, an architect's dream can very easily become a curator's nightmare.

As a footnote, it is worth noting that in most homes, pre-gaslight levels would rarely be above 50 lux!

Temperature and Relative Humidity. The use of monitoring equipment and the controlling of these levels is vital to the preservation of museum objects. The most crucial factor is to maintain temperature and relative humidity at a steady level. Chemical reactions and biological degrading will speed up at high temperatures, so in stores, where only the comfort of curators and not visitors has to be considered, they are best kept low.

Although perhaps less immediately noticeable to people, relative humidity is by far the most important factor.

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All materials which contain water react to the moisture content of the air around them. In the process of absorbing water, they expand with swelling across the grain of organic material, and then contract, usually with some distortion, as they dry out. Where objects are made of a combination of materials, perhaps timber and metal, or veneered, inlaid or painted wood, the results of this constant expansion and contraction can be particularly damaging.

Moulds will grow on most organic materials at 65 to 70% relative humidity. The corrosion of metals increases and even hardy glass and the glazes of ceramic objects can suffer serious surface damage.

Low relative humidity, which we have in this building, can also be harmful. Metals like it but paper, leather and wooden item are particularly vulnerable and subject to warping, cracking and embrittlement. When temperatures are high the internal stability of even ceramics and their glazes can be affected.

Recommended relative humidity levels for mixed collections like ours are about 50 to 55 %, but steadiness is the key requirement. Conservators are now aware that objects can adjust to and tolerate levels perhaps 5% above or below the ideal, but will always suffer if levels fluctuate. The centrally heated winter living room where daytime heating can reduce relative humidity to as low as 13%, while night-time levels rise perhaps to 50 or 60% does real and lasting harm.

Airborne Pollution. For a museum like our own in central London, airborne pollution is a major and increasing problem. Both particulate and gaseous pollutants are harmful. Any form of dust is bad for objects with the danger of abrading fragile surfaces like those of paper, textiles and soft metals. Gaseous pollutants including sulphur dioxide, nitrogen dioxide and ozone are also harmful to surface layers and will speed up the process of oxidation. At the Museum of london it was revealed that the charcoal filters in their air conditioning system were nearing the end of their useful life when silver objects in the cases began to tarnish. The conservator there tells me that unlacquered silver pieces will remain untarnished for five years in filtered air, five months or less in unfiltered.

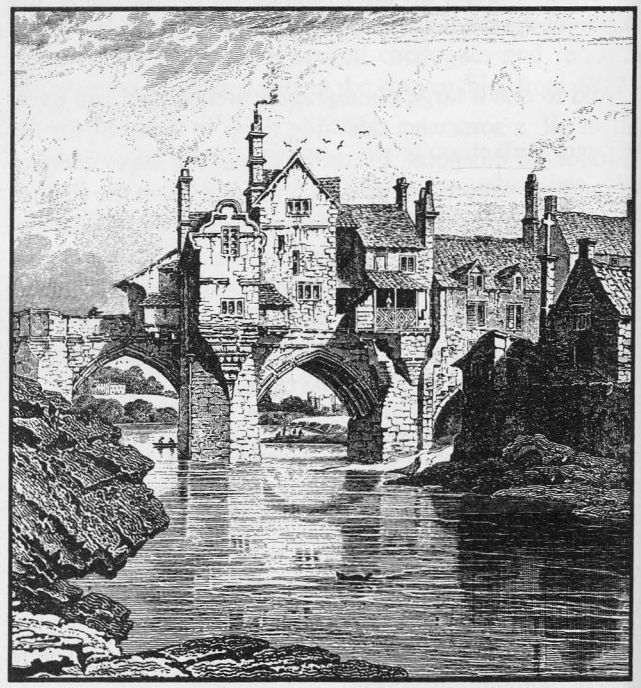
Our collection has several unique strengths. Unlike the pharmacy collections of most local history museums, usually drawn from only one or two premises within an area, the Society's holdings aspire to be comprehensive and national in their scope. Adequately documented, they allow both regional and social as well as chronological comparisons.

This scope is backed by quality with many fine pieces such as wonderful show jars bearing the arms of the Apothecaries' Company, dated 1647, and the elegant and instructive Corbyn cabinet. Another major strength is that the museum can call on the resources of an excellent library and a range of technical and legal expertise to inform its activities and support its functions.

In order to exploit all these resources for the benefit of the profession and a wider public, the best approach in my view is that the Society should consider finding a discrete space for its museum collections, and perhaps a linked resource centre, to which members and the public alike could have access without intruding on the working life of the headquarters building. A programme of temporary special exhibitions complementing the permanent displays could be used to examine current issues as well as historical themes and play a valuable educative role.

This is an ambitious proposal and one which, even if accepted,would take years to bring to fruition. In the meantime, there is much that can be done to use the collection to better advantage and to get it better known.

Abstract from the talk given by Miss Reed, curator of the Royal Pharmaceutical Society's museum, on 18 May 1994 at Lambeth.



Old houses on Elvet Bridge, Durham

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SCRIBONIUS LARGUS, THE UNKNOWN PHARMACOLOGIST.

Professor Vivian Nutton.

From time to time, it is salutary for historians to remind themselves and their audience that the selection of information presented in our modern accounts may owe at least as much to chance and the books that previous generations thought worth reading as to any conscious judgment. Important and unusual data may escape notice simply because it appears in an unlikely place or in an author whom no-one bothers to consult any longer. Thus, for example, despite the abundance of books written today on Roman Britain, and despite a wider public interested in Antiquity, you will search in vain among modern accounts of the Roman invasion in A.D.43 for the information that there survives today in a document written by one of the men who went on that expedition.

This same author tells us that it set sail from the port of Luni, on the coast of Etruria, north of Rome, and that he spent some of the time awaiting departure by wandering in the nearby hills looking for rare plants. This nautical botaniser was a doctor and writer on pharmacology, Scribonius Largus, whose Latin book of drug recipes, *Compositiones*, has been largely neglected by classicists and by historians of medicine and pharmacy alike, despite the considerable amount of varied and interesting information that he provides on both medicine and on life in the Roman world in the first half of the first century A.D.

To begin with the most parochial of reasons why he should engage scholarly attention, Scribonius Largus is either the first or the second ancient doctor who is known to have visited or lived in these islands, always excepting a few mythical Celtic heroes. This hesitation over whether he was first or second is because we know of another and somewhat more celebrated doctor who was decorated for his part in the same expedition, namely Dr Stertinius Xenophon from Cos, descendant of Asclepius and Hercules, and the personal physician to the Emperor Claudius himself. Those familiar with the works of Robert Graves, either in print or on T.V., or with his source, the Roman historian Tacitus, will recall that it was the egregious Xenophon who arranged for the murder by poison of the unfortunate emperor, and who was suitably thanked by young Nero with a large sum of money and an early retirement to his native Greek island. There, in honourable old age, he could reliably be deterred from telling the truth about Nero's accession.

Scribonius Largus, as we shall see, has much in common with Xenophon, although perhaps not an instinct to murder. He too was associated with the court of the emperor in Rome. He treated the imperial freedman and legal secretary of the Emperor Claudius, C.Iulius Callistus, and he preserves for us some details of the remedies used by successive emperors and their entourages - an antidote against poison favoured by the Emperor Augustus, a drug against colic specially prepared for the Emperor Tiberius by his freedman Anteros, and a soothing ointment used to refresh tired limbs and nerves by both the mother and the grandmother of the Emperor Claudius. Historians of dentistry will note his recipes for the tooth powders used by the sister of Augustus, by Livia Augusta, and finally by Messalina, the lustful wife of Claudius. Indeed, it is the mention by Scribonius of Messalina as the "wife of our divine emperor", that allows us to date his book to within a year at most: it must have been written before October 48 A.D. when Messalina was executed for adultery, but after late 47 A.D. when Callistus succeeded to the post of legal secretary.

Scribonius Largus thus moved in court circles, but he was probably never actually appointed an imperial physician. His information on the medicines provided for the imperial family would seem all to have been taken at second hand, passed on to him by teachers and friends, and the fact that he praises Callistus specifically for being the go-between who presented his Latin medical writings on his behalf to the emperor suggests that Scribonius was never as close to the ruler as Stertinius Xenophon. His own clientele lay among powerful and affluent ministers rather than the imperial family itself.

But who was Scribonius Largus, and where did he come from ? Details are sparse and suggestive at best. He would appear to have been born around 3 or 4 B.C., perhaps in Sicily. He certainly studied with a doctor from Centuripae, and he mentions the names of several other Sicilian doctors. His knowledge of the island extends to unusual detail: he reports that Sicilian huntsmen carried in their belts the tear-ducts of young stags in order to protect themselves against snake bite, and that only in Sicily has he seen the pointed trefoil, *Psoralea bituminosa*, growing in abundance. A Sicilian origin for Scribonius seems to me highly likely - although Barry Baldwin has recently tried to make out a case for Africa.

We can say with even less certainty anything about his family or his social and legal status, although his reference to at least two teachers implies a certain degree of wealth. But one thing is clear: Scribonius Largus was bilingual, fluent in both Greek and Latin, as would befit a Sicilian, living and working in the first half of the first century A.D. Not only does he quote Greek plant names, and then interpret them for his Latin audience, but his Latin style appears to show traces of Greek idiom. Max Wellman even suggested that his collection of drug recipes was originally written in Greek, and then translated in part into Latin for a Roman audience. That he wrote books in Greek as well as in Latin is, to my mind, certain, for two reasons. First, his reference to his Latin works on medicine being presented to the emperor would be very odd if it came from an author who wrote in Latin; secondly, a series of recipes, specifically ascribed to him, are quoted in Greek by Galen, a century and a half later. Not all of these recipes can be found in Scribonius' Latin drug book, and one must either assume that the additional recipes were

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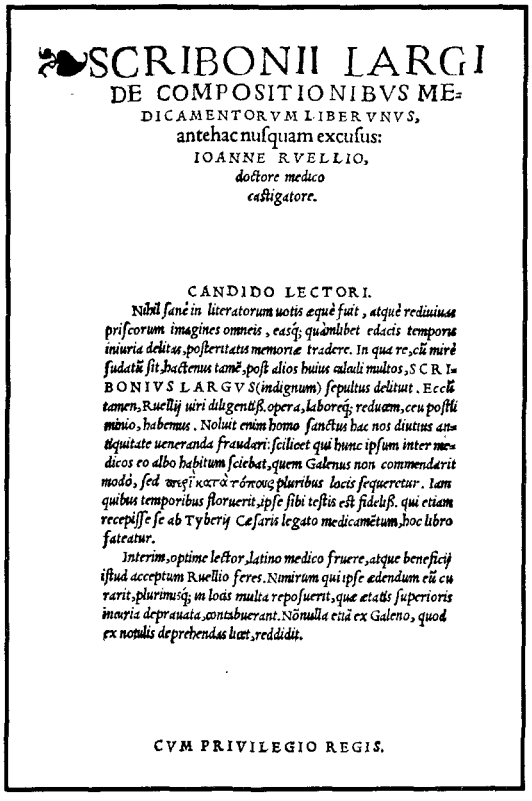
wrongly attributed to Scribonius, or conclude that what survives in Galen is only part of a larger work originally written in Greek. The latter is far more likely, as we would otherwise be faced with an extremely unusual instance of a Latin book being read (and cited) by a Greek audience.



SCRIBONII LARGI
DE COMPOSITIONIBVS ME-
DICAMENTORVM LIBER VNVS,
antehac nusquam excusus:
IOANNE RVELLIO,
doctore medico
castigatore.

CANDIDO LECTORI.

Nihil sanè in literatorum uotis æquè fuit, atquè rediuiuæ priscorum imagines omneis, easq; quàmlibet edacis temporis iniuria delitas, posteritatis memoriæ tradere. In qua re, cũ mirè sudatũ sit, hactenus tamẽ, post alios huius ætatis multos, SCRIBONIVS LARGVS (indignum) sepultus delituit. Eccè tamen, Ruellij uiri diligentiß. opera, laboreq; reductum, ceu postliminio, habemus. Noluit enim homo sanctus hac nos diutius antiquitate uenerandæ fraudari: scilicet qui hunc ipsum inter medicos eo albo habitum sciebat, quem Galenus non commendarit modò, sed ὡς ἐπὶ κατὰ τόπους pluribus locis sequeretur. Iam quibus temporibus floruerit, ipse sibi testis est fidelis. qui etiam recepisse se ab Tyberij Cæsaris legato medicamẽtum, hoc libro fateatur.

Interim, optime lector, Latino medico fruere, atque beneficij istud acceptum Ruellio feres. Nimirum qui ipse ædendum eũ curarit, plurimusq; in locis multa reposuerit, quæ ætatis superioris inuuria depravata, contaburant. Nõnulla etiã ex Galeno, quod ex notulis deprehendas licet, reddidit.

CVM PRIVILEGIO REGIS.

De compositiones medicamentorum...(Lyon: 1528)
By kind permission Wellcome Institute Library, London

But did Galen own a copy of Scribonius Largus in Greek ? Do his references show, as some scholars have concluded, that his work was well known in the Greek world a century or more after his death ? Alas, things are never so simple. Recent research into Galen's method of composing his drug books suggests that he incorporated wholesale large slices of material taken, often verbatim, from older writers on pharmacology. Far from being all Galen's own work, his writings on drugs are patchworks produced mainly from the books of others, and one must be very careful to distinguish this material from Galen's own independent investigations and comments.

All of Galen's references to Scribonius can be shown to come from earlier writers, mainly from Asclepiades the Pharmacist and from Andromachus the Younger, both of whom flourished towards the end of the first century. Andromachus, an imperial physician, certainly lived for a while in Rome, and Asclepiades may have done so also, and both could have read Scribonius' Latin. But far the great majority of the authors they quote are indubitably Greek, and other remedies found in both Scribonius and in Galen derive from Greek intermediaries, not from Galen's direct acquaintance with the *Compositones* or with any other work by Scribonius. Even if we conclude, as I think we must, that Galen did not read Scribonius himself, whether in Latin, or, far more likely, in Greek, it is nonetheless interesting to find the same recipes in both Greek and in Latin, and philologists have recently begun to take an interest in these parallels.

Another claim I shall make for Scribonius is that his is the only drug book to survive in Latin before the fourth century A.D., and indeed, that only he and Galen among early imperial writers give us an idea of what practical pharmacy was like in the Roman world.

I exclude from this sweeping claim the many recipes found on papyrus and, perhaps surprisingly, Dioscorides also. But Dioscorides, for all his many virtues, provides a survey of the pharmacological properties of plants and other substances: he does not offer a series of recipes for specific diseases. This is what Scribonius does, as his title makes clear. He calls his book simply *Compositiones*, Recipes. There is no fancy title like the *Narthex* of Dr Heras, or the *Pythian* of Dr Damokrates, two of his contemporaries: there is no pretence of any theoretical investigation, just the bare *Recipes*.

There are 271 of them, divided into three main sections; the first and largest group, numbers 1 to 162, consists of recipes arranged according to the site of the disease; numbers 163 to 199 are various recipes for theriac aand similar antidotes against poisons, bites and stings; and 200 to 271 comprise plasters, dressings and soothing salves, acopa, or as Scribonius puts it, drugs used by surgeons. This arrangement contrasts with that of Dioscorides, who organises his material by plants, but it is one known to have been followed by other writers on drugs.

The first section is further divided up on a head to toe basis: we begin with drugs for headache and epilepsy and end with those against gout, a standard procedure. According to Felix Rinne, whose 1896 study of the pharmaceutics of Scribonius is still valuable, Scribonius mentions some 242 vegetable substances, 36 minerals and 27 animal substances. Almost all of these come from the Mediterranean region, and the rest will have been imported from further east or from Africa via Alexandria. His pharmacopoeia, although much less extensive than Galen's, is nevertheless substantial and certainly superior to what was available in much of Europe, even in the last century. Whether it reflects the situation in Sicily or, perhaps more likely, only that in Rome the great importing capital city of the Empire, is a more debatable point.

To comment on these 306 substances in detail is unnecessary here. Suffice it to say that they range from the humble carrot to the exotic aloe, from fenugreek to ginger, from butter to the electric ray or torpedo fish. The latter is

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recommended as a cure for constant headache in which the continuous application of electric rays will dull and ultimately remove the pain. A similar treatment, this time allowing the fish to attack the patient's feet and shins as he paddled in the sea until the painful area became numb, is claimed by Scribonius to have cured a court official of the Emperor Tiberius.

Occasionally Scribonius lifts the veil of anonymity to reveal something of the circumstances of illness. He reports, (Number 231), how a surgeon might use a drug to remove the marks of branding, a fate which he says often happens to those who do not deserve it. He then recalls the misfortunes of the steward of Calcifies Sabinus who was shipwrecked and then imprisoned in a slave barracks where he was found half-mad, and cured by Tryphon the surgeon. Three plasters are specially recommended because they have proved very effective in treating wounds suffered by gladiators in the arena.

Some of these recipes Scribonius has gained from a most authoritative source, like Tryphon, his teacher Valens or Meges the surgeon. (He specifies surgeons more often than *medici,* although too much should not be made of this.) He tells us that the Sacred Antidote, *hiera antidotus*, of Paccius Antiochus for all pains, especially of the side and for gout, number 97, had proved a splendid money-spinner. Paccius had obtained it from his own teacher, Philo or Philonides of Catania, but had refused to divulge its secret during his lifetime. But at his death, he presented the recipe in a letter to the Emperor Tiberius who had it placed for public benefit in public libraries where Scribonius read and copied it. It turned out to be a re-working of an older recipe, updated in its ingredients and made more precise in its instructions for use and application - Scribonius himself had found it valuable also against epilepsy and some forms of madness.

Another remedy, this time against rabies,(Number 173), had been presented to the town of Centuripae on Sicily by a leading physician who had been born there, Apuleius Celsus, because Scribonius says he knew that the town was plagued by many rabid dogs. He himself is less convinced of the efficacy of this (or indeed any) remedy against rabies - no one, he says, who has been gripped with this terrible disease, as far as I know, has ever been saved. Nonetheless, he reports it as effective against a wide variety of bites and stings.

But there were other remedies of a slightly more exotic or dubious pedigree. Scribonius paid a substantial amount to "a little old lady from Africa", who had cured the stomach pains of a large number of the inhabitants of Rome by using a concoction of hart's horn, myrrh, pepper and wine. (Number 122) On another occasion, Scribonius heard of a wondrous remedy against epilepsy that was being touted on the island of Crete by an elderly foreigner (or African, *barbarus* who had been shipwrecked there. He sent along a friend, a Cretan doctor from Gortyn, who handed over a large sum of money in order to learn that this marvellous remedy was simply a piece of hyaena skin, wrapped in cloth (Number 172) Scribonius engagingly reports that he has not yet been able to try out this remedy, although he has, with some difficulty, already bought a hyaena and had it skinned, but he has had no occasion to use this prescription, and hopes he never will. Nonetheless, since these things are not in our power, it is best to be prepared for all eventualities.

All this might suggest that Scribonius Largus was a credulous ninny, unable to distinguish between quackery and proper pharmacology, but this would be unfair. His aim is to discover what works and he can be scathing about what he calls "superstition" and "unprofessional conduct". Ambrosius, a doctor from Pozzuoli near Naples, provided him with a recipe (Number 152) against the stone which would break it up into sandy fragments that could be easily passed in the urine. Ambrosius recommended that the drug should be compounded using a stone pestle by a person who did not wear an iron ring. This symbolism of stone and iron Scribonius dismisses as "mere superstition".

Similarly, when a man who showed him a remedy against epilepsy that involved the brain of a young deer, added that the deer should be killed with a dagger which had just killed a gladiator,(Number 12) Scribonius is evidently disgusted - although he still includes the advice. Remedies against epilepsy that involve drinking one's own blood or out of the skull of a dead gladiator, (Number 17) or even worse, a portion of the gladiator's liver, he condemns as falling "outside the *professio* of medicine even though some allege that they are beneficial."

This striking phrase, the *"professio"* of medicine, is Scribonius' final claim on our attention, for throughout his recipe-collection and especially in his long *Preface* Scribonius expounds a view of pharmacy as part of medicine that has rightly been called a distinctive contribution to medical ethics. Pharmacy is for Scribonius an essential part of medicine, of the activity of the doctor. Medicine is a unity; all its parts are linked together; and just as there can be no proper surgery without dietetics, and vice-versa, so neither can be practised except to the detriment of one's *professio* of pharmacology is excluded. There are pragmatic as well as theoretical reasons why a doctor should learn pharmacology; while doctors stand around learnedly arguing over a diagnosis, lesser men of no reputation far removed from the discipline of medicine and nowhere near the *professio* of medicine, have stepped in and cured the patient in an instant with an efficacious drug.

They have gained a reputation for effectiveness while doctors are credited only with dilatory uselessness. Besides, we timid mortals will submit to almost anything rather than the knife and the cautery, the promise of a treatment that does not involve surgery holds out considerable attractions. So, argues Scribonius, a knowledge of drugs is not only essential for proper practice, it also brings in paying customers. Those who refuse to acknowledge this do so for a variety of reasons; because they understand or misrepresent the views of an earlier authority; because they know nothing about the composition of drugs; or, what is worse, because they want to keep their own knowledge secret from their competitors.

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But what is this *professio* that so inspires Scribonius to demand of all his fellow doctors a detailed knowledge of drugs? It is tempting to translate the word as "profession" in our modern sense, but its primary meaning is that of a public declaration, "I say that I am a doctor, therefore I am." But it is a shared declaration, one which Scribonius traces back to Hippocrates, "the founder of our profession", and to the Hippocratic Oath. Just as a soldier when he takes the oath of allegiance imposes on himself obligations, so too the doctor by his declaration, his *professio* imposes on himself duties within the discipline of medicine. Military metaphors and analogies abound in his *Preface* as befits an old campaigner. The doctor will not give a poisonous drug to his enemy in war for he is bound by the lawful oath of medicine, but he is not prevented from killing him in battle as a good citizen.

Above all, the doctor's duty is to heal, not to harm. If Hippocrates forbade damaging the unborn child, "the father's uncertain hope", how much more care should the doctor take with human beings once born ? Although some have said that the doctor should avoid all contact with poisons and the like, this is going too far. The true doctor must know their names and appearance simply to avoid or combat them, but knowledge of their "weight" (that is how they can be made up) is against all right and justice in one's profession. Those who know about such things are the most execrable breed of drug-sellers, *pharmacopolae*, who are most akin to doctors, and at the same time the most distant from their ideals of virtue. As Scribonius says, (Number 199) in all the arts and sciences one can always find an adversary in the profession that is most like one's own.

It may come as something of a surprise then to find in an ancient drugbook such a powerful exposition of medical ethics. The doctor, *qua* doctor, takes upon himself a burden of obligations that result directly from his commitment to medicine. One of these is an obligation upon the physician. the *medicus*, to understand pharmacology and to practise it for the good of the patient and for the greater worth of the medical profession as a whole.

That is why the *Preface* to the *Compositiones* is not as the book's title might suggest, directed to those who made up, sold and distributed, but is an exhortation directed solely to doctors. The druggists, the *pharmacopolae* are dismissed as "humble folk", useful when their remedies work, "most execrable" when they do not or lead to death.

Hence, behind Scribonius' hopeful description of the doctor as a sort of saint, one can detect the outlines of a more familiar and a less virtuous affair, an intra-professional quarrel. In fairness to Scribonius' opponents one should note that it is not just the barbarian and the little old woman who offer dubious remedies and superstitious explanations. One should not forget Ambrosius of Pozzuoli with his stone pestle, or Scribonius himself who was prepared to go to extravagant lengths and to spend both money and time in pursuit of remedies that seem to us as implausible as those he condemns. But, as he says, one must be prepared for any eventuality.

This paper has introduced one of the forgotten men of Roman Antiquity who has suffered from unfortunate neglect and has been unlucky even among those who have read him. Although he was used as a major source of information by Marcellus Empiricus, a professor and doctor of Bordeaux at the end of the fourth century, his work was subsequently forgotten in the Middle Ages. Scribonius Largus had to wait until 1529 for the first printed edition of his book made from a manuscript that immediately vanished, and until 1655 for a commentary. Even more surprising perhaps, it was not until 1974 that an actual Latin manuscript of his work re-surfaced in the Chapter library of Toledo, and not until 1983 that a good modern edition appeared in print. Even now, there is still no English translation of more than the *Preface* and the two published versions of that are both profoundly unsatisfactory. Scribonius Largus, I submit, is worth more than this.

Bibliography.

The standard edition is now that of S.Sconocchia, *Scribonii Largi Compositiones*, Leipzig, 1983.

The *Preface* is translated into English by J.S.Hamilton,"Scribonius Largus on the medical profession", *Bull. Hist. Med.*, 1986, 60:209-216; and E.D. and A.A.Pellegrino, "Humanism and ethics in Roman medicine: translation and commentary on a text of Scribonius Largus", *Literature and Medicine*, 1988, 7:22-38. Neither is entirely reliable. The essential study of the *Preface* still remains, K.Deichgraber, *Professio medici. Zum Vorwort des Scribonius Largus*, Mainz, 1950.

B.Baldwin, "The career and works of Scribonius Largus", *Rheinisches Museum*, 1992, 135:54-82, provides the most recent account in English, but his arguments are not always valid.

For details of the drugs used by Scribonius, one needs still to consult F.Rinne, *Das Rezeptbuch des Scribonius Largus, zum ersten Male theilweise ins Deutsche übersezt und mit pharmakologishem Commentar versehen.* (Historische Studien aus dem Pharmakologischen Institut der Universität Dorpat, 5.) Halle, 1896; and W.Schonack, *Die Rezepte des Scribonius Largus zum ersten Male vollständig ins Deutsche übersezt und mit ausführlichem Arzneimittelregister versehen*, Jena, 1913.

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PRESCRIPTION BOOKS

HISTORY OF PHARMACY COMMITTEE NOTES.

The Committee showed a great interest in the older prescription books and were keen that they should either be loaned them for examination by the Committee or that arrangements should be made for the books to be safely deposited at the local Record Office, or better still, at the Pharmaceutical Society. In May 1956 it was noted that the Committee had been loaned such a book by Mr F.D.P.Lewis-Smith of Hereford. A report on the prescription book was made by Dr J.M.Rowson.

"This is a leather bound volume 9 inches by 8 inches by 1¼ inches bearing no means of identification or association with any business. The pages are not ruled and are numbered as far as page 212 although entries continue for a further sixteen;the first twelve are a home-made index. Prescriptions are not numbered and are recorded in two columns per page.

Original name of business: W.Ravenhill, mercer and druggist.
Date of foundation: 1793 by Mr W Ravenhill.
History of business: In 1831 it became Morse and Vale, chymist and druggists; by 1850 it was John Vale, chemist and druggist, and in 1863 was P.Ralph, subsequently Ralph and Clarke, until it was purchased by Mr Lewis-Smith from the widow of the original Mr Clarke's son.
Period covered by the book: 25 February 1835 to 31 May 1851.
Volume of dispensing:

1835*	199	prescriptions	1843	8	prescriptions
1836	210	"	1844	25	"
1837	150	"	1845	14	"
1838	33	"	1846		
1839	45	"	1847	14	"
1840	35	"	1848	42	"
1841	5	"	1849	120	"
1842	29	"	1850	140	"
			1851+	70	"

* Only from 25 February. + Only until 31 May.

All entries up to July 1837 are in one script, after which other ones appear. Entries for 1835 to 1837 are very systematic but those from 1838 to 1840 only fairly so. During 1841 to 1847, the entries become more untidy and a disproportionately large number of prescriptions with earlier dates occur. Entries for 1849 and 1850 show improvement.There is no internal evidence available to explain the marked fluctuation in volume of dispensing, the years 1835 to 1837 and 1849 to 1851 being good in comparison with 1838 to 1848. Certainly the "lean years" are untidy and in several different hands and perhaps we see here a marked decline and subsequent rise in business, or there may have been an indifference to the keeping of records. No clear answer can be given, but we must remember these were "the hungry forties" and 1846 brought the repeal of the Corn Laws.

Area served: A number of entries record the patients' addresses as street names but without any indication of the town which we must assume to be Hereford. The names of several local inns were noted as were those of several villages surrounding Hereford.

The population of Hereford in 1835 was 10,280, and 10,950 in 1842, and according to Piggott's Directory and Slater's Directory there were nine chemists and druggists in Hereford in 1835. These rose to twelve in 1842 and 1844 but dropped to eleven in 1850 and 1851.

Analysis of prescriptions dispensed: A sample of 300 preparations contained the following percentages:

	1835	1850
Mixtures and draughts	39	47
Pills	37	39
Powders	12	5
Lotions, liniments & embrocations	3	4
Ointments	4	2
Sundries	5	3
	100	100

The sundries included blisters, bulk drugs for fomentations, electuaries, leeches, plasters and tooth powders.

Mixtures were generally not made up to volume. One particularly interesting prescription consisted of Ol. Lini, half a pint, Gin 2 fluid ounces, Sp.Vini Rect. 1 fluid ounce, Acetum 2 fluid ounces, Gum Acacia 2 drachms and Sodae Vulf. 1 drachm The directions were: Put these into a strong bottle and let them simmer for an hour stirring it well.

Patients. There was only one titled person, a Lady H.Jones. Many patients were identified by name and by trade, business or profession with no address, for example, Mr Bowen, butcher. The following were found. Bank, blacksmith, broker, butcher, china shop, dress maker, gate keeper, grocer, hairdresser, hatter, joiner, painter, saddler, school, shoe maker, stay maker, stone mason, tailor, tea dealer. These suggest that it was a good middle class business meeting the pharmaceutical needs of the ordinary populace of the town.

Proprietary medicines: Liq.Potass. (Brand) occurs several times, and Liq. Opii Sedat. (Battley) was also noted.

Range of drugs and galenicals prescribed: A study of the prescriptions for 1835 shows the use of 117 different galenicals. 43 crude drugs and 39 chemicals.

Five different compound mixtures were prescribed including those of camphor and cinnamon; these were generally as ingredients of more complex mixtures. The mixture vehicles included Aqua Destillata, Aqua Fontana, and five aromatic waters (caraway, cinnamon, rose, peppermint and spearmint); ten different infusions (including calumba, catechu, cascarilla, orange, rhubarb and senna); also four decoctions including that of broom.

Tinctures formed the largest group of galenicals with 22 different members, including Friars' balsam, laudanum, paregoric, digitalis and ferri mur. The pill formulae recorded

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were very varied but accounted for the prescribing of eleven different extracts, including those of Anthemis, Coloc. Co., Lactucarium and Papaver. Nine compound pills were prescribed which included Galbani Co., Rufi and Scillae, also Pil. Hydrag. and Pil. Calomel Co. which with extemporaneously prescribed pills containing Hydrarg. submur., were by far the most common form of pill medication.

The following were often prescribed as excipients: Syrups of ginger, lemon, orange and tolu, and tincture of benzoin.

Ointment bases used were lard and suet and the compounded preparations were Cerat. Calam., Cerat. Cetac. and Ung. Hydrarg. Nit.

The majority of crude drugs were prescribed as powders in the preparation of mixtures, pills and powders; such were Barbadoes aloes, Socotrine aloes, ammoniacum, cayenne, cubebs, digitalis, ginger, guaiacum, ipecacuanha, jalap, mastiche, myrrh, opium, rhubarb, scammony, senna and squill. The essential oils of anise, caraway, cassia, clove, juniper and peppermint were much used in pill masses. Manna, copaiba and tamarind pulp as leeches were also prescribed.

The prescribing of chemicals was not extensive and the purgatives (Hydrarg. submur., Magnes. carb., Magnes. sulph., Sodii sulph.) were the salts most frequently used. Potassium salts were the most numerous and included the acetate, carbonate, subcarbonate, hydriodide, nitrate, sulphate, tartrate and supertartrate. The following iron compounds were in use: carbonate, hydroxide, sulphate (Sal Martis), tartrate and ferri ammoniata. Both the oxide and the subnitrate of bismuth were employed. It is interesting to find also quinine sulphate, morphine acetate and veratrine in use. Citric acid, the acetates and tartrates are the only other organic compounds prescribed in 1835 in this book.

One may form some opinion of the business being conducted in this pharmacy. The patients were chiefly middle and working class, and there were some family recipes recorded. The pharmacist was clearly a man of scholarship, for the hand that wrote the 1835 to 1837 pages produced a clear flowing script with extended Latin for prescribed ingredients, directions and dates. His armamentarium of medicaments was extensive, and to compound the various products good pharmaceutical skill and dexterity were required. A sound professional pharmacist wrote these pages."

The committee were also loaned three prescription books by Mr D.T.Jones, the principal of Anderson & Virgo of the Foregate, Worcester. The books were numbered 6, 1 and 3, and these were again analysed by Dr Rowson,

Prescription book, No.6.

"This is a leather bound volume measuring 13 inches by 8 inches by 1½ inches. The volume is indexed, all the pages ruled and each prescription numbered in sequence. Each preparation is not numbered and it would appear on average that eighty prescriptions contained a hundred preparations. The script, general style and extended Latin are excellent and the impression given is that of an elegant pharmacy.

Original name and date of foundation: Edward Evans. 1808.
History: in 1829 the business was bought by George Anderson who was joined in about 1860 by Virgo.
Period covered by this book: 27 July 1823 to 24 July 1824.
Volume of dispensing: Some monthly figures.

1823	August	128	1824	January	199
	November	165		February	115
	December	126		May	119

The number of prescriptions for one year (less two days) was 1,631, making an average of 136 per month. From the running numbers terminating on 30 December 1823, it would appear that 1,798 prescriptions were dispensed in 1823. Variation in volume of dispensing is not marked.
Area served: Worcester in 1821 had a population of 24,051, and according to Piggott's Directory of 1823 there were eleven druggists, whilst that of 1829 shows an increase to fourteen. Very few addresses are recorded but it does show that the surrounding villages were also served by this pharmacy.
Analysis of prescriptions: A sample of 300 preparations showed the following percentage distribution:

Mixtures and draughts	38	Pills	38
Divided powders	13	Ointments	2
Lotions,liniments & embrocations	5	Sundries	4

Sundries included blisters, plasters, electuaries, eye drops, leeches and ingredients for fomentations such as poppy heads and camomile flowers. There was a frequent use of Vin. or Tinct. Sem. Colchici, and iodine in the form of tincture, pills, ointment and potash solution was employed. The following were noted: Tr. Castorei, Tr. Digitalis, Tr. Helleb. Nig.,Tr. Valer. Vol., Pulv. Digitalis in pills, Oxidi Bismuthi alb., Mist. Saluias, Pulv. Sem. Santon. (Anglic.)
Aq. Menth. Virid.(or Spic.), Dec. Althaea, Dec. Hordii (and Co.) and Gelatina Ribesiarum were all used as vehicles. In a number of instances an alkaline carbonate mixture was directed to be mixed with Succus Limonis and to be drunk whilst effervescing. The proprietary medicine, Liquor Potassae Brandish occurred fairly frequently.
Patients: These included such well placed people as The Very Rev. the Dean of Worcester, Sir Thomas Salisbury, The Hon. John Coventry, The Earl of Mount Charles, Sir Edward and Lady Denny, Sir Edward Blount, Bart., and The Hon. Lady Margaret Cocks.

Most doctors issuing the prescriptions used only their initials, but amongst them was Sir Charles Hastings (1794-1886), the founder of the future BMA."

Prescription books 1 and 3.

Dr Rowson was of the opinion that these books were a pair, although No.1 was interleaved throughout with grey blotting paper. Mr Jones thought that they were brought into

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the business at 12, Foregate by George Anderson and are records of some other pharmacy. This certainly must be the case of No.3 as its dates include the same period as that of book No.6, running from April 1821 to January 1826. Although much the same doctors had prescribed, the titled people were different, being Sir George Beaumont Bart., Sir A. Lechmore, Bart., Lady Littleton and Lady Lucy Whitmore.

"The volume of dispensing was relatively less than in book No.6. In four years and eight months, 595 preparations were dispensed, and it is noticeable that a great increase occurred in the year from June 1824 to June 1825 and was maintained until the book ceased.

Prescription book No.1 is of earlier date, viz. from 1805 to 1813, during which time 311 preparations were dispensed, the peak being reached 1809 to 1810. The area served included such distant places as Cheltenham, Evesham and Malvern. There was a very large proportion of parsons amongst the patients, who also included the Rt. Hon. Lord Allen, Hon Mrs Grey and Lady Riversdale.

Analysis of prescriptions: A sample of 100 preparations did not give substantially different figures from the later books.

Mixtures and draughts	40	Pills.	33
Lotions,liniments & embrocations	6	Powders	10
Ointments	4	Sundries	7

Sundries included electuaries, plasters, bulk drugs, toilet and culinary preparations such as dentifrices and curry powder, blacking, and veterinary medicines which included sheep drenches, drenches for milk fever, and those for distemper in dogs. Archaic terminology is found in numerous prescriptions, e.g. Kali ppta., Natron ppta., Rubig. Ferri ppta., Sal. Succin., Lactis Ammon. (a mixture of Ammoniacum), Succ. Cicutae Spiss., and Tinct. Cort per. comp. A number of prescriptions give instructions for preparing infusions or decoctions. The preparation of sponge troches is also of interest, e.g. Sponge Calc, 2 drachms, Pulv. G.Arab. and Sacc. alb. of each 1 drachm, and a sufficient quantity of Syr. Simp. to make 24 lozenges. (See Pereira, *Elements of Materia Medica*, Vol.2, Pt.2, p.722, 4th. edn., 1857.)

Pricing: This was mostly absent in the other books, and if present was in code, but in book No. 1 a few prices are "in clear". A draught of 3 fluid ounces cost 10d., whilst a 1 ounce pill mass in 3 grain pills was 2s 6d , and a drench for milk fever 6s.9d."

Collection of early nineteenth century drug-trade invoices.

In 1964 H.E.Chapman, secretary to the PATA since 1956, joined the History Committee; always interested in old catalogues and printed price lists he gave a collection of invoices to the Committee to which he attached an article he had written.

"A collection of invoices for items supplied to Jacob Anthony, chemist and druggist of the High Street, Bedford, during the decade 1829 to 1839 present a picture of the range and variety of goods used and sold in a country town pharmacy in the early nineteenth century. It is also an illuminating guide to trade prices then prevailing and, to some extent, a directory of the drug trade houses of the period. This collection, pasted in a folio of 340 pages, came into my possessiomn after being retrieved from a paper salvage drive during the war.

Drugs and medicines. In 1829 Anthony was obtaining both of these from Charles Butler & Co., 37,Queen Street, Cheapside. He had 8 ozs. of gamboge at 8s. a lb., 5 ozs. balsam tolu at 14s. per lb., and 1 lb. olibanum at 3s. Included in the order were half a dozen Robinson's Groats at 4s. a dozen, and a quarter dozen of bears' grease at the same price. The next invoice from Butler included 8 lbs. of best olive oil at 1s. a lb., 1lb. Lin. Camph. Co at 6s., and 2 lbs. camphor at 2s.10d. a lb., 3 lbs nutmegs at 6s.6d. a lb., and a pound of "anis drops" at 1s 10d

Essential oils. Whittaker and Perkins of 102, Blackman Street, Boro', chymists and druggists, invoiced him for 1 lb.3 ozs. of oil of peppermint at 40s. a lb.; 11 ozs. of oil of cloves at 20s. a lb., and 2 lbs. emp. lyttae opt. at 4s.3d. a lb. A footnote to the invoice says, "The above Ol. menth-pip. you will find very fine and old, we having had it three years." They also supplied a set of cupping instruments (13s.), ½ dozen trusses at 5s. each, 3 medical spoons (2s.8d. each), 2 cupping glasses (1s.2d. each) and a sharp-pointed bistoury (3s.).

Gale, Baker and Warde, Bouverie Street, Fleet Street, were also supplying drugs and chemicals. A lengthy invoice includes 7 lbs. of white arsenic (6d. a lb.), 4 lbs. senna leaves at 2s.9d. (a pencilled note in the margin says "very bad"), 4 lbs of quassia chips at 1s. per lb., 7 ozs. zinc sulphate (1s.8d. a lb.), 2ozs. oil of pennyroyal (1s.9d. an oz.). There are also four "baby knives", one pill knife, ½ dozen "blue saucers", 500 chemical matches (1s.9d.), ½ ream of blue demy paper at 9s., various dental forceps and instruments which fore-shadowed the extensive dental practice which developed as an off-shoot of Anthony's pharmacy. Two pounds of rose leaves at 7s. a lb. were also in the order, the total value of which was £12. 5s. 11d., including the hamper charged at 4s. and the cask at 1s.6d.

Another invoice from Gale, Baker is for ½ lb. of "crocus in fano" (saffron) at 34s a lb., and 2lbs. 6ozs."crocus in placent" (cake saffron) at 8s. a lb., 2 lbs. fine dragon's blood (4s.6d.), 7 lbs. turmeric (7d. a lb), 1 lb. red poppy petals

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(3s.6d.), 1¼ lbs. "rad. rhei Tky. opt." (12s. a lb.), 4lbs. sweet oil of almonds (2s. a lb.), 10 ozs genuine ("ver") oil of caraway (12s. a lb.), 3½ lbs. liq. ammoniae purae (1s.6d. a lb.), 5 lbs. "acid nitras" (1s.6d. a lb.), 4¼ lbs. spirit of nitre opt. (2s.4d.), 2¾ lbs tartaric acid (3s.2d. per lb.), ½ gross Noriss' purple-shouldered pill boxes at 18s. a gross, and a similar quantity of the shallow boxes at 12s. the gross. On the invoice is an unpriced item, "4 yards zinc wire", and a note saying, "the zinc wire cannot be procured in Town".

These goods and many other consignments came by Brown's wagon, an established Bedford carrier who travelled thrice weekly between that town and London.

Soaps and perfumes. An invoice from Price and Gosnell ("late Patey, Butts, Price and Gosnell") of 12, Three Kings Court, Lombard street, bears the royal arms and the legend, "Perfumers to His Majesty". From Price and Gosnell Mr Anthony bought on one occasion sixteen assorted items, including 3 lbs. patent Windsor soap at 1s.4d. a lb., the same quantity of brown Windsor at the same price, ½ dozen each of "Real Old Brown Windsor" at 9s. and 18s. the dozen, shaving cakes, Macassar oil, (at 24s. a dozen), ½ dozen Eau de Cologne at 24s. a dozen, 1 dozen assorted smelling bottles "with silver caps" priced at from 18s. to 42s. a dozen, 1 dozen empty cold-cream pots and labels costing 3s. The invoice also included ½ dozen gold beater's skin (4s. a dozen), 1 dozen court plasters (4s.) and 2 dozen "salts lemons" at 8s. the dozen.

Vinegar and mustard. A frequently recurring item is vinegar, no doubt sold to customers for use in pickling and preserving. Champion and Green of Vinegar Yard, Old Street Road, supplied half hogsheads of "Vinegar No.18" at £3 and "Vinegar No.22" at £3 10s; casks were 10s. extra. A 10 gallon carboy of "distilled vinegar" was charged at 10s. plus 10s. for the container; all three vinegars were sent in July and August 1829. The same firm supplied Anthony with casks of "fine mustard" and "super mustard" which may have been used for making "prepared mustard" of the kind still (1964) sold in Bedford.

Yates and Mayor, 52, Little Britain, supplied a runlet of seal oil (£1 8s.), a firkin of ivory black (10s.9d.), 7 lbs. fine brown candy (1s a lb .), 4lbs. Valencia almonds (1s.3d. per lb.) and 7 lbs. fine tapioca at 10d. the lb. A sundries item was 12 gross of phial corks bought from Thomas Mugridge of Lynn at 6d. a gross, which probably came from King's Lynn to Bedford by lighter.

Proprietary medicines. Charles Butler's invoices, mostly for quarter dozens, included Davison's lozenges, Anderson's pills, Hooper's pills, Dicey's Daffy's elixir, Dalby's Carminative, Poor Man's Friend, Singleton's ointment, Spilsbury's drops, Shephard's camphor lozenges, Congreve's elixir, Marshall's cerate, Powell's balsam, Snook's pills, Wyman's pills, Inglish's pills and Perry's essence. With those goods were also sent acid drops, peppermint lozenges, 3 lbs. Fry's cocoa and 3lbs. Fry's chocolate.

Another "patents" house of the day was James Drew & Co., 22, College Hill, London, and among the goods they despatched were, Colley's Corn Liquid, Smyth's Scurvy Drops, Whitehead's essence of mustard, Steedman's rhubarb pills, and that old favourite, Dr James' fever powders. In June, Anthony bought from Elizabeth Cox, bookseller, stationer and printer, St. Thomas' Street, Southwark, who specialised in "Latin and English labels for apothecaries and chemists etc. in great variety", a copy of "Thompson's Dispensatory" at 15s., as well as 100 "Soda and Seidlitz" labels.

A curious item is an invoice from John G. and Jeremiah Pilcher, Morgan's Lane, Tooley Street, for ten gallons of "Elephant oil" at 3s.6d. the gallon. Pilchers are described as "Oil merchants, white lead and colour manufacturers, varnish and Japan makers". One invoice from them is for 10 gallons of sperm oil (£3 8s.2d.), 10 gallons pale seal oil (£1 15s.), 4 gallons refined rape oil (£1 2s.5d.), 2 lbs. wax bougies (5s.), 7 lbs. gum arabic (1s.6d. a lb.), 14 lbs. blue vitriol (42s cwt.) and 4 dozen bolus knives (50s.)

The last invoice to be noted on this occasion is from T.H. & J. Gaitskell, distillers, wine and brandy merchants, 229, Bermondsey Street, is for six gallons of spirits of wine at 19s. the gallon !"

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Diary Dates for 1996.

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Wednesday, 8 May 1996.
Wednesday, 13 November 1996.

Members' Activities.

W.A.Jackson was appointed a trustee of the Humane Research Trust in October 1994. This trust, which condemns the use of violent tactics to bring about change, is a registered medical research charity which raises funds to invest in new technology and human skills to assist scientists in medical research which does not involve the use of live animals or animal tissue.

Mervyn Madge wants to know if a drink popular with Cornish and Devon fisherman called 'Mahogany' was known in other parts of the country. It was devised by a friend of Boswell, a Mr Eliot, and was composed of two parts of gin to one of treacle. One supposes one would have to be well in with the smugglers to be able to prepare any quantity of it!

We have a new member from India, Professor Harkishan Singh of Chandigarh. An avid collector of archival material, he writes:"What started as a small hobby some decades back, the collection of material of historical value has now assumed a formidable magnitude. The collection includes original or photocopies of reports of the government committees, parliamentary debates, different legislations, minutes of several statutory bodies, and selected pages of certain journals of the last 150 years; biographical material; books, periodicals, pharmacopoeias and formularies; papers of pharmaceutical organisations; material on pharmaceutical education and research and professional pharmacy; publications on indigenous drugs; personal papers of some luminaries of pharmacy etc. The collected material has been properly organised and bound. There are now available around 800 volumes. This collection is the nucleus of a national archive of pharmacy, and with the publishing of *History of Pharmacy in India and related aspects*, colleagues in the profession have started to take this collection seriously.

"The collection will be made public after I have finished my writing or am gone from the scene, whichever may happen earlier; it will then become the property of the profession and may be appropriately housed at some central place for refernce. I wish to continue to build the collection. further, others may expand and nurture it. I request pharmaceutical scientists and educationalists, members of the profession, pharmaceutical organisations, private and government agencies and institutions to send me documents, correspondence, photographs etc. which we need to save for posterity."

His research on the history of pharmacy in India was supported by the University Grants Commission, (1989-92) and since October 1994 the Indian National Sciences Academy has sanctioned a three year project on pharmaceutical development in India during the last two centuries. Recently he has published a book on pharmacopoeias and formularies, and with Drs. A.S.Chawla and V.K.Kapoor has co-authored *Medicinal chemistry research in India.*

He has been elected to the International Academy for the History of Pharmacy and will be formally inducted at the Academy's biennial meeting in Paris in September 1995. The British members of the Academy are looking forward to meeting him there.

1848

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NOTES ON THE SAFFRON PLANT
(CROCUS SATIVUS,L.)

A.Robinson.

"The rosy morn in saffron drest."

In May 1681, Thomas Baskerville (1630-1720), son of the antiquary Hannibal Baskerville, made a journey from Oxford to Cambridge, Ely and Norwich. He was an observant man, noting matters of interest in both town and country. Of Bury St. Edmunds he wrote that it was "a very beautiful inland town" with well built houses and spacious streets, "and because the gentry do much frequent this town they say here are five physicians, for which the apothecaries' shops are large and full of good drugs...."[1]

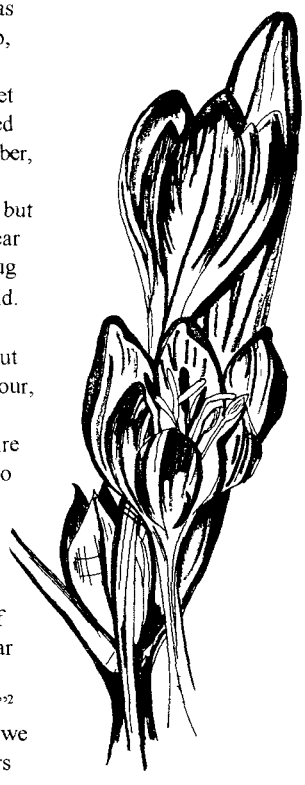
On his way to Newmarket he had noticed that around Little and Great Chesterford much saffron was planted. The plant seems to have caught his imagination because he then relates that in the area around Haverhill (telling us that this was pronounced Haverel) saffron was again much planted. Here he received a "discourse of the husbandry and planting of it" which he carefully noted.

"About mid-summer when they design to new plant a ground, for they usually let the roots stand for three or four years, they dig them up and dung the ground, and then set them again as thick as they can plant them, and 5 inches deep, that so they may hoe off the weeds for three or four years without spoiling the roots, for they let the weeds grow all the summer for cattle to feed on, and hoe them off about the middle of September, a little before the saffron flowers begin to rise.

"In the first years planting the roots do yield but few flowers, the second and third years they bear flowers plentifully and in the fourth year are dug up again to be dunged and planted as above said.

"When the flowers come up the people are diligent to gather them in baskets and to take out the chives in the middle of them of a reddish colour, and that is that which they call saffron. Then these chives are dried in an iron pan over the fire till they are so well dried that they are not apt to be mouldy. Thus cured, a pound is valued at 25s. in these days, but formerly it was double the price of the weight of silver for saffron.

The saffron heads or roots are grown so cheap that you may now in these parts buy a bushel of them for 1s.6d., and sometimes a 1s. as this year 1681, the man at the *Dog* at Melsome, in the road between Royston and Cambridge told me."[2] The reduction in price is quite remarkable when we remember that between 3,500 and 4,000 flowers are required for the production of 1 oz. of dried stigmas and tops of the style.



Saffron had at one time its place in both the pharmacy and the kitchen as well as in the dye-pot. Although it has no therapeutic value there are some who still have faith in it, and it is used as well by those who delight in saffron cakes.

It has a romantic history if Hakluyt is to believed. According to him the first corm was brought to England in the 14th. century during the reign of Edward III by a pilgrim from Tripoli who had concealed it in a hollow carved out of his staff. Discovery would have resulted in a particularly nasty death.

Its growth is not easy to establish as it does not care for our damp climate and only light soils really suit it. Nevertheless as early as the last quarter of the 14th. century the accounts kept by the college of King's Hall, Cambridge (later to become a part of Trinity College) give details of the garden there in which vines and saffron were planted.[3] Saffron was cultivated in small fields,or as they were usually termed, gardens. The town we associate above all with its culture is of course Saffron Walden, Essex.

It is well documented that there were two saffron gardens in Walden in 1481; in the time of Richard III John Rede was paid xiid. for "pyking v unc" of saffron.[4] Its growth was to be found throughout the villages of Cambridgeshire. In 1531 the town accounts of Cambridge show that saffron was grown on some scale, at least eight to nine acres of it in any one year. The prior of Barnwell had ten acres of it which must have made a wonderful sight when the plants were in flower. In many of the wills of the time mention is made of saffron gardens varying in size from half an acre to three.[5]

Hanbury and Flückiger noted that two centuries after the importation of viable saffron corms into this country and in spite of all difficulties, it was being exported to the Continent. It figures as *Safron d'Engleterre* in a price list of spices sold by apothecaries in northern France in the years 1565-70 as being the most valuable of three sorts of saffron available. It was evidently produced in considerable quantities for many years, as in 1682 it is to be found in the tariff of the *apotheke* of Celle, Hanover, as *Crocus communis anglicus*.[6]

The price varied from 60s to 20s. according to good or bad seasons as Baskerville had been told. The book of the Fraternity of the Holy Trinity at Walden records that in 1540, a pound of saffron for Lady Paget cost 12s., but in 1561 a pound for the Queen's attorney was 25s., and in 1661 the price had risen to £3 10s.0d.[7]

The cultivation of saffron however was not confined to Essex and Cambridgeshire. William Boston of Newark-on-Trent, chaplain, in his will dated 21 March 1466 bequeathed to Thomas Hette and his sister a garden planted "cum croco" lying close to the east end of the church, as well as "all heds of crocus planted in my garden at the end of le Appilton Gate, except six quarters"[8]

Saffron grown in Cambridgeshire in 1770 was still sold at Newport Fair which took place on 17 November, but the days of its cultivation were drawing to a close.

The Lysons in their *Magna Britannica* reported that it was no longer grown at Fulbourn and Cherry Hinton only some ten years later. Joseph Clarke wrote in 1887 that when he was a child he had known the last of the saffron growers, a man called Knot who lived at Duxford about six miles from Saffron Walden. "He grew about half an acre, and made a journey once a year to dispose of his produce. Up to 1816 he continued to grow saffron, and in 1818 the only remains of the crocus were to be found in his garden. I well remember

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the clay ovens and the sheets of white-brown paper used in drying the chives."[9]

Because it is not easy to establish, it has been suggested that on occasion substitution with the Autumn Crocus or *Crocus nudiflora(Sm.)* has been made because, in contrast to saffron, it is easily grown. It is found today near isolated hill farms and old homesteads in the Halifax area, all of which had once been the property of the Knights of St. John of Jerusalem, the Knights Hospitallers, as well as in the hinterland of the populous market towns of Derby and Nottingham. It is suggested the Knights were the agents of this crocus' distribution, either because of an error of identification or because it was felt to be equally useful as saffron. Indeed chemical examination shows no material difference and the two have the same tinctorial value both in water and alcohol.[10]

In about 1980 it was decided to reintroduce saffron to Saffron Walden and the lilac coloured flowers may been in early autumn beside the museum. The corms had been obtained from Holland. With this good example before them the Cambridge City Parks department has planted the saffron crocus in the parterres in front of Cherry Hinton Hall.[11]

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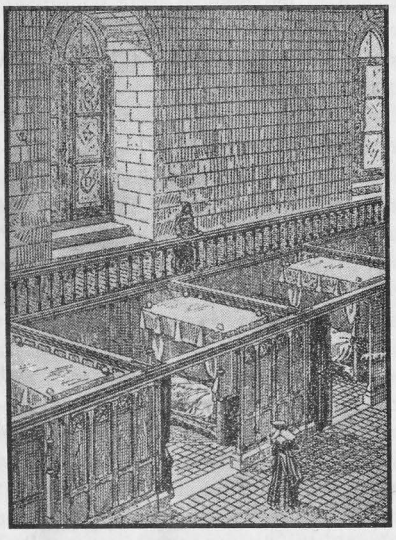

A Thirteenth-century Hospital

THE MEDIAEVAL HOSPITALS OF KENT.

Leslie G. Matthews.

We need go no further back than the Norman Conquest for confirmation that the practice of medicine and the provision of remedies was almost entirely in the hands of churchmen. They were literate and could, and indeed did, base their practice upon the accepted codes of the classic authors. The formularies of the 10th. century onwards indicate the diversity of the remedies prepared by mentioning mortars for bruising and powdering, plasters, bandages, decoctions and clysters.

The health of the monarch was of prime importance - there were always other claimants to the throne only too ready to intervene and to supersede an ailing ruler. The names of the high ranking physicians of the early Norman kings are recorded. Several held high church appointments and some of their accounts for spices and electuaries appear in the Pipe Rolls of 1171-2. Not until the reign of King John (1199-1216) do we find much mention of spicers. Several are recorded in the Curia Regis Rolls, c.1200. In Canterbury itself the names of spicers in the Roll of Freemen and Traders' lists start in 1392.

Hospitals.

The association of highly placed churchmen with the practice of medicine is likely to account for their interest in the poor whose ailments at that period received little attention. It is not surprising therefore that some of the earliest hospitals in Kent were founded by church dignitaries, and that in addition to care for the diseased and the sick, there was laid upon many the obligation to provide for the poor.

The earliest hospital in Kent, that for lepers at Harbledown, near Canterbury, was founded by Archbishop Lanfranc about the year 1086. Before describing Harbledown and the other twelve leper hospitals in Kent we may remind ourselves of what was regarded as leprosy from the 11th. century to the end of the mediaeval period. Dr John Cule in his paper on the treatment of leprosy in Wales (published in the first number of our Society's *Transactions* in 1970) says it was a term that included anyone full of sores, hence the word 'lazar', and might cover scrofula, lupus, erysipelas, lepra, elephantiasis graecorum, and even syphilis.

Though it has often been said that leprosy was introduced into Western Europe and into England during the 10th. and 11th. centuries, it is still uncertain whether this was true leprosy, that is Hansen's Disease, which causes great disfigurement, or some other rampant disease. Before 1300, eight leper hospitals had been founded in Kent; at Ospringe (founded 1234) there was a particular obligation for the brethren to relieve poor lepers, the disease then being described as "a distemper at that time, from the customary feeding on fish, exceedingly common among the lower people and the religious."[1]

Parliamentary proceedings before 1350 record taxation schemes relating to lepers and insist that houses founded for their reception were not to be used for other sick and infirm. A notable instance of this was St. Giles, London. Sometimes lepers preferred to stay outside the hospital, if indeed they were allowed any preference, disliking institutional confinement and preferring to benefit from the benevolence of passers-by. Local regulations often stipulated that lepers should quit cities and the highways, and betake themselves to solitary places.[2]

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The care, and often, the isolation of lepers persisted until the end of the 15th. century. By the end of the 14th. century however the numbers of lepers in the county of Kent, as elsewhere, had lessened considerably. Partly that may have been accentuated by the Black Death of 1348 which is likely to have hit heavily those already infirm from disease. Nevertheless, a new house for lepers was founded at Boughton-under-Blean in about 1380, and others elsewhere. The need obviously continued, for in John o'Gaunt's will of 1399 money was left to various leper houses. The disease was still in the minds of benefactors as late as 1466 when Richard of Lamisfield left money for "the leprous men now in the house of lepers" at Sandwich, and to three others; and in 1480 it is recorded that there were a few lepers at Lydd one of the ships of Romsey, *The George*, came safely home. At Lydd too, the guardian paid 10s. for the removal of one leper to a lazar house.

Harbledown. c. 1086

The leper hospital in this charming village about a mile west of Canterbury seems to be the earliest in Kent. It was founded by Archbishop Lanfranc in about 1086.[3] The site was probably selected because of the proximity of a healing spring. It was to become one of the largest of the leper houses with a hundred inmates.

It was at Harbledown that pilgrims were expected to dismount, take off their shoes, put on a hair shirt and continue on their way to Canterbury on foot. Henry II in 1174, four years after the murder of Thomas Becket, arrived at Harbledown to pray in the chapel before going barefoot to Canterbury to do penance. It was too at Harbledown that he ordered 20 marks (£13 6s.8d.)to be given to the hospital for the poor each year in perpetuity. This annual payment was continued through the centuries and was paid by the Canterbury Borough Treasurer certainly until 1942 when the village suffered heavy destruction during the bombing of Canterbury.[4]

The leper hospital adjoined St. Nicholas, a late 11th. or very early 12th. century Norman church with good glass. The lepers' dwellings on the hill-side at Harbledon are known to have been wooden. The rules of the hospital, sometimes known as the Hospital of the Blean,(a forest nearby), were probably settled by the archbishop when he founded it. Men and women were to have separate accommodation, and the lepers were not allowed to wander without permission though this would be granted for useful business or if there were a death in the patient's family.

Later archbishops gave the hospital their support but because voluntary gifts had so diminished by 1276, the sick feared destitution and Edward I felt impelled to come to its rescue. Leper houses were seldom on a sound financial basis, but happily Harbledown's revenue was securely based by 1355. Even the remains of the hospital had disappeared by 1790 but the site was marked by almshouses built about 1840

In addition to the leper hospital, Lanfranc also set up the Hospital of St. John for the aged and infirm poor in Northgate, Canterbury in 1084.[5] It too was large with about thirty men and thirty women but unlike the Harbledown leper house was well built in stone, and was dedicated to St. John the Baptist. It was damaged by fire in the 14th. century but some traces of Norman work remain, and an original and largely intact Norman lavatory block was discovered in 1984.

A peculiar custom is recorded of this hospital. When a horseman was heard approaching, one of the men ran out and sprinkled the horseman with holy water. He then offered the upper part of a shoe bound with a brazen rim and set with a piece of glass. This was reputed to be a shoe of St. Thomas, and it was expected that the horseman should kiss the relic and give some small coin.

The inmates of both hospitals had to go to the Tythery or its barn, presumably to collect corn and other commodities when tithes were paid in kind. This was so far away that they complained and money was allotted instead. The Hospital of St. John was destroyed by fire in the late 14th.century and a general brief was authorised enabling funds for reinstatement to be collected. In the mid-17th. century many of the rebuilt houses were taken down and at the end of the 18th.century numbers were further reduced. The Archbishop of Canterbury was then empowered to nominate twenty persons who were resident in or near Lambeth to receive assistance.

Chatham. 1078.

While earlier writers have accepted that St. Bartholomew's Hospital at Chatham was founded by Gundolph, Bishop of Rochester, in 1078, later opinion, based upon the architectural features of the chapel relating to the first quarter of the 12th.century, supports the view that both the hospital and the chapel are more likely to have been founded by Hugh of Trottiscliff, Abbot of St. Augustine's, Canterbury in 1124.[6] It was this abbot who also founded St. Lawrence's hospital in Canterbury.

The Chatham hospital was intended as a lazar house for poor and leprous persons of both sexes, with a master in charge. The early revenues were small but Henry III increased and confirmed them. The hospital have would sunk but fortunately the founder had connected it with the Priory of St. Andrew in Rochester which supplied provisions. In addition the hospital had the oblations and profits of the two altars in Rochester Cathedral, and also the alms taken from those who dined at the archbishop's table on the day of his installation together with the table cloth. When Rochester Priory was dissolved, the gifts to the hospital ceased but it escaped dissolution itself and continued to be of service. During the reigns of James I and Charles I the rights of the brethren then in the hospital were confirmed. Later the Dean of Rochester enjoyed the hospital's lands and estates. By 1782 the number of inmates had dwindled to four and soon after the hospital was demolished.

Canterbury. St. Lawrence, 1137.

The Hospital of St. Lawrence was founded by Hugh, Abbot of St. Augustine's, Canterbury, in 1137. The registry and chartulary are almost complete and were studied by Eveleigh Woodruff in 1939.[7] Details include such duties as those of the laundress and the need to watch men very closely during harvesting time. The hospital's first duty was to house monks suffering from contagious diseases but especially leprosy; secondarily it was an almshouse for relatives of both sexes of the Augustine monks. By 1275 no more women were to be admitted and the accommodation was given to poor and infirm priests. Though the hospital survived the Dissolution, it was visited by Cardinal Pole during Mary's reign and then suppressed, the site being granted to Sir John Parrott. The site is said to be marked by a wall on the Dover Road about a hundred yards west of the entrance to the Canterbury

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cricket ground. A partial excavation uncovered a mediaeval carving in Caen stone of St. Lawrence on a gridiron.

Buckland, near Dover. 1141.

A hospital for poor persons was begun at Buckland in 1141 at the instigation of two monks of St. Martin's Priory, Dover.[8] Dedicated to St.Bartholomew, it was intended to house ten men and ten women but funds were insufficient and numbers had to be reduced. Newly admitted lepers had to take a vow to be faithful and sober, to leave half their goods at death to the hospital, and to pray for the royal house and the burgesses of the town. They were then sprinkled with holy water and blessed.[9] Traill writes that the Archbishop of Canterbury preached sermons especially to obtain support for the hospital. Wealthy lepers had to deposit a hundred shillings on admission, and Traill suggests this constituted the first paying-patient scheme in the country.[10] The hospital was dissolved under Edward VI and then granted to a local magnate, finally being demolished for its building materials.

Thanington, near Canterbury. pre-1164.

The Hospital of St. James, established during the mid-12th. century, probably by the Prior and Convent of Canterbury was the subject of a Bull of Pope Alexander III in 1184. This forbade admission of any but leprous women for whom the hospital had been intended. By the end of the 12th.century the prior had undertaken to maintain three priests and a clerk there and 25 leprous women. The hospital was oppressed by the Hospital of St. Thomas, Eastbridge, Canterbury, the number of inmates was gradually reduced and by the end of the 15th. century it appears that leprous persons were no longer admitted. It then became a normal convent but had to surrender to the Crown in 1557.[11]

Romney. c. 1184.

The Hospital of St. Stephen and St. Thomas had Adam Cherring as its founder in about 1184. Both sexes were to be admitted and in 1332 there were fifteen in all but none thirty years later and the buildings were derelict. An almshouse replaced it but was short-lived. The buildings had completely collapsed by 1481 and this was the opportunity for Bishop Wayneflete to appropriate the rentals due on the property for the benefit of his newly established Magdalen College at Oxford. The college retained its interest until the 1930s when a private owner acquired it. Not a stone could then be seen above ground but the site could be identified and a track led to it by way of Spitalfield Lane. In a partial excavation of the site reported in 1935, fragments of walls were uncovered, a tomb in a vault was disclosed and pieces of 14th. century stained glass and pottery were found.[12]

Otford. pre-1228.

The Rolls of Henry III of 1228 mention a hospital or house of lepers at Otford, together with an authorisation to the keeper of lepers there to have, out of the issue of the Archbishop of Canterbury, 35s. for the use of the lepers, a sum which had customarily been allocated for the lepers by earlier archbishops.[13]

Sittingbourne. 1252.

The lepers of the hospital called Sweynestre, at the entrance to Sittingbourne coming from Rochester, had a grant of protection from Henry III in 1232. The chapel associated with the hospital was dedicated to St Thomas of Canterbury and was in the king's hands.[14]

Tonge. 1252.

The Hospital of St. James, Puckeshall, possibly founded in 1202 but certainly in existence in 1252, has only a bare mention. It is known that aged servants, soldiers and retainers could by royal favour be sent to end their days in some of these hospitals. Henry IV was generous enough to agree to one of Richard II's retainers being maintained at Puckershall. No details are available except that it must have been dissolved by 1557 for in that year it was granted to Sir John Parrott.[15]

Rochester. 1316.

In his will of 1316, Symond Potyn left a house for a hospital in Eastgate, Rochester for the poor men or women of Rochester who were leprous, diseased or impotent.[16] They were to be received there and live on the alms of charitable people. The founder stipulated that the inmates were not to haunt taverns, if they wanted drink then they must buy it at the tavern but drink it in the hospital.[17] The hospital escaped the Dissolution but because of abuses at the end of the 17th. century, a Commission ordered it to pass to the city of Rochester, the Dean and Chapter with the mayor and others becoming its patrons. It was rebuilt in 1717 and twelve apartments were provided.

Two other leper hospitals in the Rochester area, Langeport and Whiteditch, are mentioned by Clay but no further details have been found.

Broughton-under-Blean. pre-1384.

This hospital for lepers had been built without a licence by one Thomas atte Herst of Boughton, and only when the Earl of Arundel gained the ear of Richard II in 1384 was the founder pardoned for not first obtaining a licence to build. There was a large chapel dedicated to the Holy Trinity and the house used as the hospital was of the same dimensions, 150 ft.x 50 ft. The hospital drew its inmates from those who ordinarily frequented the king's highway. It was agreed that it be regarded as the king's gift, with the king as nominal founder and protector. The inmates were enjoined to pray for the royal house and the good of the realm. Little is known of its continuance; the 12th-13th. century church has important monuments and has been restored.[18]

Sandwich. The Maldry

Boys says (1792) that,"There was a house of lepers in Sandwich called the Mauldry, and a small piece of land on the north side of the causey leading to Each-end is now called Maldry, and probably was part of the estate belonging to this house." Hasted (1799) confirms this and refers to several wills in the Prerogative Court of Canterbury.[19] It is interesting to note that the French for a leper house is *maladrerie* and the corruption to 'maldry' is obvious. Another reference occurs in Boys, this time to the town ordinances of about 1300, in which it was written that if an orphan died under age his goods and chattels passed to the mayor and jurats who distributed them to various charities including, "some for the lepers upon the wall by the road leading to Ech."

The last leper house to be established in England was at Highgate in 1472 but there is a reference to the master of Maldrey more than twenty years later.

Bobbing.

R.M.Clay mentions a spital at Bobbing for lepers but gives no details, and Hasted merely says that in Caius's Street at the corner of the parish there was anciently a 'spytal house' for the poor and distressed.

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Hospitals for the Sick and Poor.

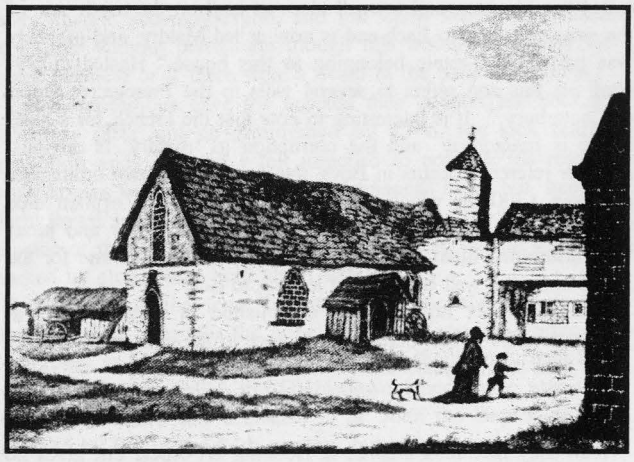
The number of hospitals for the poor and infirm constitute the largest section of the mediaeval Kentish hospitals, beginning with that at Harbledown already described. The information about many of them is scanty but some are of special interest. Many though styled hospitals were, or became, almshouses.

Canterbury.

As might be expected from its wealth, Canterbury was well supplied with hospitals. Of the three to be discussed here, Maynard's Hospital sited eastward out of Stour Street and founded by John Maynard in 1317, is the earliest. It housed the poor of both sexes for about fifty years. The house and the chapel were repaired in 1617 but all were blown down in a great storm of 1703, to be rebuilt again in 1708. Cotton's Hospital, deriving its name from Leonard Cotton (1580) adjoined Maynard's and consisted of a single brick range. Boys' Hospital in the Northgate suburb was founded by Sir John Boys in 1612 and had at first eight men and four women, the number to be increased if funds permitted. Boys laid down strict standards of behaviour, such as the wearing of long black gowns on Sundays at the Cathedral service, and the warden teaching the boys to read and write.[21]

Sandwich.

Of the three hospitals in Sandwich, the first, St. Bartholomew's is given the date of 1217 in Pevsner's *Buildings of England*,(N.E. and S.E. Kent, 1969) and that it was said to have been built with the spoils of a sea battle. Older authorities date it to 1244, the year in which a Bull of Pope Innocent IV stipulated its use for the weak and infirm. The government of the hospital was in the hands of the mayor and jurats of Sandwich who made visitations twice a year. At an enquiry during the reign of Queen Elizabeth, the hospital was not suppressed, the local community having made effective protests. A handsome chapel was attached to the fifteen houses and much land went with them; a fine Purbeck marble effigy, not later than 1250, is in the chapel and is believed to commemorate the founder. The houses were rebuilt in the 18th. and 19th. centuries.



The Chapel, St. Bartholomew's Hospital, Sandwich

St. John's Hospital is known to pre-date 1287. This was for the poor of both sexes; here the allowance of the men was stopped if they failed to do such service as they could.

The third hospital, St. Thomas', otherwise Ellis', takes its name from its founder, Thomas Ellis, a draper of Sandwich. It was to house twelve poor persons when built about 1392. Its trustees administered a considerable income and it was never suppressed; it still functions though rebuilt in the mid-19th. century. The mediaeval entrance arch remains and the hospital is accessible through a passage between New Street and the Corn Market.[22]

Hythe.

This town had two hospitals, the first, pre-1276, St. Bartholomew's, was for poor persons. The walls of a house on the site called the Centuries are of the original building. The second, the Hospital of St. John,(1546) was for the needy poor and for those maimed in the wars; it was still in existence in 1837.[23]

Sevenoaks.

Of the two hospitals in Sevenoaks that dedicated to St. John the Baptist was started in 1336 and dissolved soon after 1538 when it came into the hands of Henry VIII. The other consisted of almshouses founded in 1418.[24]

Dartford.

St. Mary's Hospital, founded before 1256, was known as the Spital House in 1509; it had been mentioned in the William of William Quof in 1491. The Holy Trinity Hospital provided almshouses for five persons.[25]

Hospitals for Travellers and Pilgrims.

It was an obligation for monasteries and convents to give accommodation to pilgrims, and indeed, to travellers where there were no alternatives. After the canonisation of Thomas a Becket, the pilgrimage to Canterbury became the most renowned in England so that the demand for lodgings grew and the inns were usually full; people came from the Continent through Dover and increased the need. Naturally, Canterbury sought to retain the advantages that could be reaped from the influx of both rich and poor. Becket's body was taken up and deposited in its shrine in 1220 and the Feast of the Translation was kept on 7 July with a jubilee year held every fifty years beginning in 1270. The splendour of the tomb was renowned. In 1500, Polydore Vergil wrote of what he had seen at Canterbury. He described the great size of the tomb of St. Thomas which was covered with plates of pure gold, the gold itself hardly being visible for the mass of gems of all kinds, agates and cornelians,some sculptured, some in relief, and cameos.

The Hospital of St. Thomas the Martyr on Eastbridge or King's Bridge, was founded in about 1190 by a merchant named Edward FitzOdbold for twelve poor pilgrims; only those who were sick and infirm were allowed to stay more than one night.

A few years later,Archbishop Hubert Walter granted the tithes of certain mills to Eastbridge, "being moved by the poverty and necessitous condition of the Hospital" which suggests it was inadequately endowed. At about the same time the Hospital of St. Nicholas and St. Katherine nearby, also known as Cokyn's Hospital as it had been founded at about the same time by William Cokyn, was united with Eastbridge Hospital. The union was confirmed by a Bull of Pope Innocent III in 1203. Later, when funds became low

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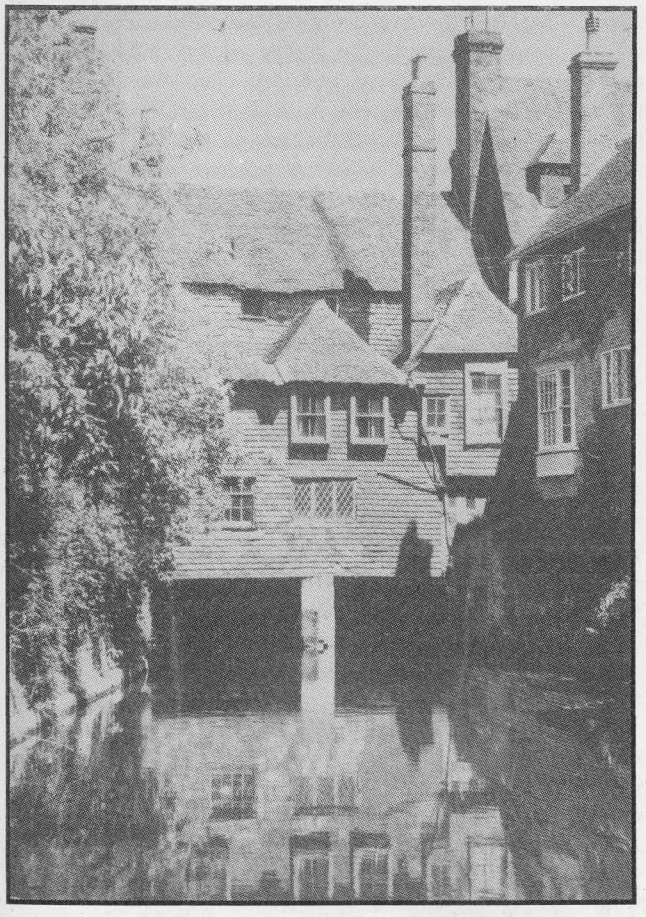
all pilgrims were restricted to one night's lodging and refreshment, healthy pilgrims were preferred to sick ones and the admission of lepers was strictly forbidden. Many benefactions however were received, the revenue of the church of Sts. Cosmos and Damian of Blean were allocated to it by Hamo de Crevecoeur, and the hospital was granted exemption from taxes on its gardens.

It survived the suppressions of Henry VIII and Edward VI but in 1560 was converted into tenements. Archbishop Parker recovered it and declared that it should be used for "wandering and wayfaring brethren and the poor". An investigation fifteen years later, in 1575, showed that the hospital was in a bad way: beds had been sold and part of its revenue had been taken to provide two scholarships to Corpus Christi College, Cambridge. Queen Elizabeth then granted all the remaining revenues to John Fanshaw, one of her gentlemen pensioners, but Archbishop Whitgift stepped in and regained the hospital's rights. Poor wayfarers were to receive 3d. a week, and in time of war, beds were to be found for lodging poor soldiers passing through Canterbury. This last obligation was removed once Calais had been lost to England during Mary's reign.[26]

Cokyn's building was rented out and its revenues ultimately used for the benefit of poor clergymen's widows until in 1657 John Cogan decided to give the house over to them. It has excellent Tudor features with a fine aisled hall; the entrance is through a side door in St. Peter's Street.[27]



St. Thomas's or Eastbridge Hospital, Canterbury

Sittingbourne.

Alongside a hermitage called the Schamele and a small chapel dedicated to St. Thomas of Canterbury, the gift of a cleric in 1288, was a house for the shelter of pilgrims and travellers. The site is near what is now the Volunteer public house.

Dover.

The Maison Dieu or St. Mary's Hospital owes its foundation to Hubert de Burgh when Earl of Kent and Constable of Dover Castle. There is some doubt as to date of foundation, 1203 and 1221 both being given. It was intended especially for poor pilgrims and poor brethren and sisters. Many poor pilgrims would have passed through Dover and it is recorded that the customs men in the port often robbed incoming and outgoing pilgrims.

As Henry III was present at the dedication, de Burgh gave the patronage into the king's hands. The Crown had the right of corrodies there, which meant that servants of the Crown could be sent there as pensioners, often for the remainder of their lives. When the king or officers of the State passed through Dover en route for France they often stayed at the hospital.

In 1544 the buildings were considered suitable for a victualling yard for the Royal Navy and the hospital was forced to surrender to the king. It was used for Navy purposes until 1790, a red brick house near the Maison Dieu being built for the Agent Victualler in 1655. The hall and tower of the Maison Dieu survives and now form part of the Dover Town hall.[29]

Ospringe.

The Maison Dieu at Ospringe was one of the best known halts on the road to Canterbury. There were two buildings, one on each side of the stream. Henry III founded the Maison in 1234 with a dedication to the Blessed Virgin Mary. A master and three regular brothers of the Holy Cross were installed to celebrate mass and to give refreshment to poor and needy travellers and pilgrims. One chamber, called the *Camera Regis,* was reserved for the king's use when he passed that way. Separate rooms were provided for the relief of poor lepers.

The guardianship of the Maison Dieu was placed in the hands of the Bishop of Winchester. The keeper of the hospital was to have £10 to construct certain infirmaries, rooms for the sick. As a royal foundation the Maison was very liberally endowed and continued to serve until the reign of Edward IV when plague reduced the numbers to two. The buildings and endowments then passed to the king who placed their care in secular hands. Henry VIII later gained control and granted the Maison to a favourite, John Thornhill, but Bishop Fisher of Rochester bought up his interest and insisted that the whole estate be granted to St. John's College, Cambridge. Some remains of two mediaeval buildings are still there.[30]

Maidstone.

All that is left of the Newark Hospital at Maidstone is the chapel which was enlarged into a parish church in 1826-7. Archbishop Boniface's Hospital of the New Work of Prestesbelle in Maydestane, to give its full title, with its dedication to Sts. Peter and Paul, was built about 1260 for pilgrims and travellers. In 1395 another archbishop, Courtney, wished to convert the then parish church into a college and obtained permission to do so, gaining all the lands of the hospital for this purpose, provided

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he maintained some service to the poor. He erected his college but it fell to the Dissolution of Edward VI. In the 19th. century the dilapidated shell of the chapel which remained, still appeared to some observers to be "a rare and beautiful specimen of the first species of the pointed style", and it was decided to convert what remained into a solid Victorian church. The curate-in-charge had the original chestnut roof taken down because it obstructed his altered windows. What became of the mass of bones found during the reconstruction is not recorded.[31]

The Treatment of the Sick.

We have little information on this point. Judging by the practice of the large monasteries there would have been an administrator, usually called an infirmarer, who might be a non-medical clerk ordering any medical supplies needed and who called in medical aid when he or the master thought necessary. It is more more than likely that the master or his assistants would have acquired some knowledge of herbal remedies.

In some hospitals, nursing-sisters were appointed to watch by the sick, and at St. John's, Nottingham, one man was responsible for the sick ward.[35]

It is only the bills of the larger mediaeval monasteries that appear to have survived. These give information about treatment and special diet for the monks - Westminster is a case in point, and their lists of medical supplies, physicians' bills and purchases of spices reveal much about that side of monastic life.

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Reviews.

A.M.Young, *Antique medicine chests,* Brighton, Vernier Press, 1994, pp.92, 43 illustrations and 12 colour plates.

£25 hardcover, £18 paperback. ISBN 1 898825 03 3 and 1 898825 02 5 respectively.

In the first two chapters Dr Young traces the evolution of the medicine chest from classical times to the early 20th. century. She discusses briefly the 16th and 17th. century military and naval chests which contained surgical instruments as well as medicines, the elaborate and expensive containers, many made in Germany for royalty, the nobility and the very wealthy, and the beautiful 17th. century 'treasure chests' designed to contain jewellery, cosmetics and/or other valuable items including medicine. In the 18th. century much smaller, cheaper chests became available in continental Europe, and attempts were made to select remedies of proven efficacy for them, resulting in them containing a fairly standard group of drugs by the end of the century. The early 19th. century saw the introduction of homeopathy, and by 1820 homeopathic medicine chests were being made.

The remainder of the book is devoted to British medical chests. Here, medical services were not so well organised as on the Continent, and the availability of self-help books such as Richard Reece's *Medical Guide* encouraged the replacement of 18th. century domestic manuscript recipe books and home-made remedies by medicine chests and instruction manuals. These retained their popularity, and wooden allopathic as well as homeopathic chests were still on sale in the 1890s, although remedies in the form of pills and granules, such as Kirby's "Ready Remedies", and "Tabloid" brand compressed tablets in chests, cases or wallets became available in the second half of the century.

The different styles of British chests and their development throughout the 18th. and 19th. centuries are dealt with in some detail. Comparitive tables of cabinet styles and contents are given to help the collector in dating chests as being made before or after c.1820, and these are useful, but perhaps simplistic as one finds examples which combine details from both periods. The contents give a reasonably accurate picture of the drugs in common use when the chests were made, and also, to some extent, the types of therapy which were popular such as lancets for venesection, glass tubes for the application of leeches, plaster irons, and enema or ear syringes as well as scales and weights, measures, mortars and pestles, and an ointment slab or pill tile. It is a pity that no mention is made of "Biochemic Remedies", inorganic homeopathic preparations, sets of which were sold in travelling cases earlier this century.

It contains references, a bibliography and appendices on manuals and museums with collections of chests. The numerous illustrations contribute greatly to the value of the book which must surely become the standard work on British medicine chests for some time to come. It will be of interest, not only to serious collectors, but to pharmaceutical and medical historians and others with a general interest in antiques.

W.A.Jackson.

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K. Fraser Annand & A. Butcher, *Historical Remedies & Reminiscences,* St. Day, Tredennick Press, 1994, pp.128, numerous illustrations. Hardback £6.99.

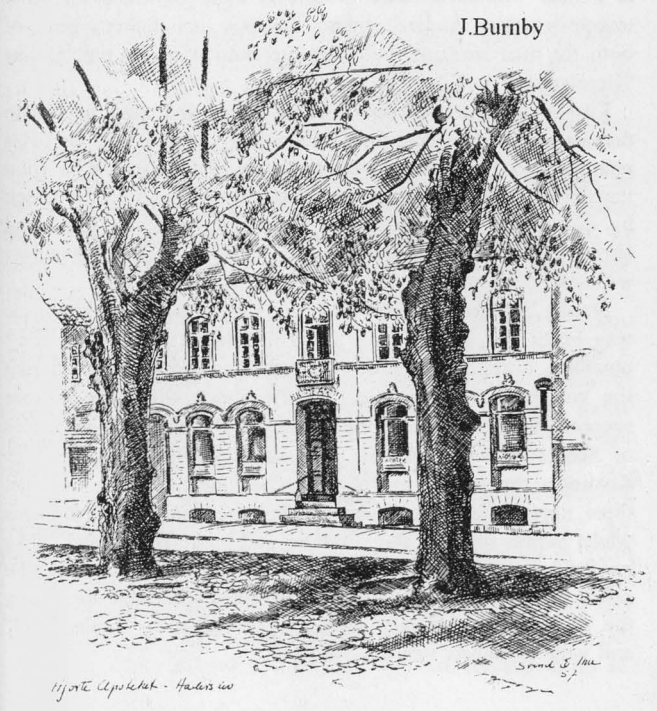
This book is a wonderful pot-pourri of recipes and remedies taken from the papers of Rashleigh, Basset and Pendarves, about which Cornish families there are short articles. From this collection one is able to learn how to make red sealing wax, black ink or a pen, how to keep your house free from rats and mice, and read the 1845 prescription of Dr Richard Wise for artificial ass's milk. Should it be necessary you can learn how to take "Nits out of ye Hair", take "Red Pimples out of ye Face" or how to make "Hair grow on a Bald Place" or take away corns. There are recipes for purges and the "cholick" as well directions for "A Farting Powder", the last requiring the essential ingredient of "ye yellow skin at ye bottom of a gooses foot."

An "Electuary for the Worms" was culled from the 1720 edition of *Pharmacopoeia Bateana* or *Bate's Dispensatory*, to which William Salmon had added the encouraging footnote, "I am confident, that if it does not kill the Patient, it will certainly kill the Worms." It is interesting to note that a BSHP member, Mr G.J.Hendra, pharmacist of Truro, was good enough to loan his copy of *Bateana* to the editor of this work. The editors have most wisely prefaced the book with *Caveat Lector.* "Do not attempt these Remedies. Some of the ingredients may be highly poisonous."

On a less serious note there are articles on the holy wells of Cornwall, on how to make a successful herb garden, reminiscences by a vet., a kennelman and a G.P., and a long list of old Cornish place names, among them such intriguing ones as Amalebria, Skillewadden and Noongumpus. Do they still exist ? There are eight attractive line drawings of herbs ranging from comfrey to violets with notes on their use in Culpeper's time and today, and also two pages with key attached of some very unattractive surgical instruments.

All in all an excellent gift to yourself or friends.

J.Burnby



SOME OLD DANISH PHARMACIES.

M.W.Burnby.

The first known pharmacies were established by Royal Concessions which were nearly always given to those who were already in attendence on the royal court. The oldest pharmacist's licence so far found is dated 4 March 1514 and was for Hans the Apothecary who set up a pharmacy in Copenhagen. In the licence most of the rights and duties that became the future framework of Danish pharmacy were already stipulated. The system was based on a foreign pattern, particularly that of some German states. The fundamental right was established of a monopoly in the sale off medicines, which was tantamount to to an exclusive right to dispensing physicians' prescriptions, there was also an exemption from paying a special trade tax and to certain irksome civil dutiess. They were also allowed to sell groceries which often led to conflict with merchants and grocers as the merchandise was not specifically defined, this eventually led to specific lists being produced. The licence usually also gave him the right to sell wine, both retail and wholesale, so that nearly always he had a wine-bar as well as a pharmacy, often leading to inn-keeping which frequently proved more profitable to him than his pharmacy.

In return the pharmacist had to have a full stock of the medicines, both compound and simple, of the day which of course included fresh herbs. He had to have a well equipped dispensary and had to sell his drugs at reasonable prices. This last point led to considerable controversy so that Christian IV in 1619 in his ordinances for physicians, surgeons and pharmacists, had a price list produced which had to be adhered to without fail; he also introduced inspection of pharmacies by physicians - but only if complaints had been made.

Haderslev, Jutland.

The oldest still extant pharmacy in Denmark is the Lion Pharmacy in Odense on the island of Funen established in 1549, but that at Haderslev is a close runner-up for it was founded on 15 July 1557. On that day Duke Hans the elder, son of King Frederik I granted a licence for six years to Anton Bate (the Latinised form of his name being Antonius Battus), the ducal pharmacist up at the castle. The duke decreed that Bate should always keep his shop well provided with whatever pertained to pharmacy and that by way of a salary he would receive two "ortug" of rye, two oxen, a quarter of butter and two fat pigs, as well as a home and garden free of civil responsibilities. Furthermore he had a monopoly in Haderslev to sell sweet wine, claret, spices and confectionary, and could carry his goods toll-free from the town of Ribe.

Bate had come from Flanders from which his family had fled to escape religious persecution. He was a capable man and ran the pharmacy in Haderslev for 38 years. He also continued to act as pharmacist at the castle of Hansborg in Haderslev where in the same year as Bate's appointment the duke built rooms for distillation and the preparation of medicines.

When the Emperor's troops in 1627 occupied Jutland and made their headquarters in Haderslev, the pharmacy was burnt

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down together with a large part of the town. Although it is known that Haderslev had a pharmacy again by at least 1640 it did not return to its old site before 1681. Two of Bate's successors, Vortius and Zeise, both obtained medical qualifications and practised both professions.

It was not until the early years of the 19th. century that Haderslev obtained another pharmacy, and it was then that Bate's old pharmacy was named the Deer or Hjorte.

The Deer or Hjorte Pharmacy, Haderslev.

Kolding, Jutland.

In 1985 the Lion Pharmacy at Kolding was four hundred years old. Before its establishment the people of Kolding had either to travel some sixteen miles south to Haderslev for their medicines or else buy preparations from a travelling salesman who pitched his tent in the market place from time to time. Otherwise they were dependent on local folklore and the herbs they could gather themselves; for surgical matters they had to visit a far from skilled barber.

At Kolding castle there was a ducal pharmacist who made up medicines for this local court but his dispensary was not very adequately stocked and was certainly insufficient should the king be staying there. Consequently on 5 March 1585 Frederik II issued a Royal Concession whereby Herman Reiminch was appointed the town of Kolding's first pharmacist. His duties and rights were very much the same as those of the Haderslev pharmacist, such as making and selling medicines at reasonable prices, providing fresh herbs, spices and confectionary, and keeping a wine cellar but he had the additional advantage of being required to travel around to the local markets to sell his goods. Reiminch had previously lived at Haderslev and is known to have visited the great Whitsun market at Aalborg in the north of Jutland with his goods.

Reiminch had been born in Westphalia, Germany, and proved to be an excellent business man. He developed a flourishing cattle business as well as his wine bar and pharmacy, so it is not surprising that ten years after his arrival in Kolding he was able to build a new pharmacy and house around a courtyard in the market place. He died only a few years later, but his concession was allowed to pass to his widow, and then in 1622 to his son-in-law, Baltzar Braband, who had been his "provisor", best translated perhaps as "qualified assistant".

Kolding's geographical position in Jutland has led to it being more than once the scene of bitter fighting, so much so that during the Thirty Years War (1618-48) Braband actually left the town to set up a pharmacy in Christiana (Oslo) and live there until 1634. After Braband's death, his widow ran the pharmacy until she died in 1654.

The next pharmacist, Lorentz Langhorst, was there only a few years before he moved on to the nearby developing town of Fredericia. In his place came the royal pharmacist Johan Adolph Møller who despite the broken-down condition of the town made a success of his pharmacy and of his financially more important wine-bar and distillery which he decided to separate, moving the pharmacy to a position which it occupied until very recently.

Once again the concession passed to a son-in-law, Benedikte Tode, but he proved to be most unsatisfactory, both as a pharmacist and a husband, and he soon ceded the pharmacy (1701) to Melchior Dietrich who came from Riga in present day Latvia. Dietrich's tenure lasted less than ten years and Richard von der Hardt became the next concessionaire, but even though he worked hard and even prepared for the local magistrate a catalogue of herbs growing in the area, ended up by having to seek help from the poor law in the last years of his life as he lived to what was then the great age of 89. When he was 66 he had sold his somewhat run-down pharmacy to Christian Cornelius Eilshou in whose family the Lion Pharmacy remained for the next 107 years.

Eilschou was the son of a farmer, Anders Lauridsen of Eilshov in Funen. Surnames were flexible in those days and for some unknown .eason Anders' children all took their father's place of birth for their surname, but after the fashion of the time it was "Germanised" to Eilschow or Eilschou.

Eilshou soon set the pharmacy to rights and then set out to dominate pharmaceutical trade in southern Jutland. He started a pharmacy in Ringkøbing with royal permission which he soon transferred to his "provisor", and bought another in Ribe which he quickly handed over to his elder son. He also had large agricultural and horticultural interests. The Kolding business was sold to his younger son, Morten Christian, in 1779.

During Napoleonic times war again visited the town, the castle was burnt and French and Spanish soldiers billeted on their unwilling hosts. The greatest damage however occurred during the war between Germany and Denmark when the former successfully over-ran and then annexed the southern provinces of Schleswig and Holstein. For many hours battle raged in Kolding's streets, the market place changing hands no less than three times. The pharmacy supplied medicines and bandages whilst bullets smashed the windows and broke bottles and flasks on the benches, but for a period its personnel had to seek the safety of the cellars. Whenever the Danes were able to occupy the square, the pharmacy staff re-appeared with "smørrebrød" and wine as bullets whirred overhead.

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The new Lion or Løve Pharmacy, Kolding.

Poor Eilshou died only a year after the war was finished, and his son-in-law this time being a surgeon, the pharmacy was sold to Frederik Ludvik Friis from Vejle. Friis was an enterprising man and built up a large trade in dried medicinal plants, particularly camomile and elder flowers. Eventually several thousand pounds of the latter were exported annually to Hamburg. Not content with this Friis set up one of the first mineral water factories.

And thus we can continue the Lion Pharmacy's history down to the present day.

Assens, Funen.

To British eyes pharmacy in Denmark seems tightly regulated, relatively non-competitive and highly organised, but a glance at the early history of the Swan Pharmacy at Assens, only eight miles away from Hederslev across the Little Belt, shows that matters were not always so.

Until the end of the 17th. century there was no pharmacy in Assens, and the local people, like those in Kolding in former times, had to rely on traditional household remedies, perusal of Henrik Smids' *Medical Book* of 1546, and the local barber Peter Bolt who is certainly known to have supplied medicines. On 4 December 1672 in the reign of Christian V it was formerly enacted that all trade in medical goods could only be allowed if a special royal licence was held. Two men with licences tried to start pharmacies in Assens after 1672 but both failed, partly because the town had not recovered from the destruction it had received at the hands of the Swedes in 1658.

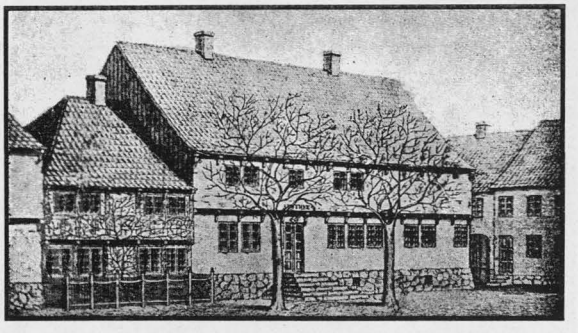
A Lambert Franck, son of Tobias Franck pharmacist of Ribe,(it is probable that it was from his father he gained his pharmaceutical knowledge) became a citizen of Assens in 1698 and agreed to run an inn there. A law of 1695 had laid down that magistrates must see that resting place for travellers and their horses was made available in their towns, but curiously many who were invited to carry out this task refused to do so. Such a 'refuge' was of course particularly necessary in a ferry-town like Assens.

Franck appears to have run a pharmacy at the same time as his inn although he had no royal licence to do so. Nevertheless in church registers he is referred to as an apothecary, and there is documentary evidence that he dispensed medicaments to the sick. Lambert Franck in October 1701 bought by auction the house of the late Fru Bodil, widow of Lieutenant Colonel Pestel in the main street, the house next door up to and around the corner, thus extending his inn, wine-bar and pharmacy. The buildings were well situated but required extensive repairs.

The year 1703 must have brought Franck worries because Christoffer Becker, son of pharmacist Jacob Gottfried Becker of Odense, nearly came to Assens but in the end changed his mind. Franck strengthened his position by becoming a town councillor in 1705, so much so that he petitioned the king for a royal licence which giving him a monoploy in Assens for the sale of all goods pertaining to pharmacy, which would include, besides medicines, oils, essences and fragrant waters currently sold by itinerant traders, wines and spirits. Why the application was never progressed further is not known, or although he went on practising as a pharmacist, why he was never seriously challenged either.

In a quarrel with the mayor, he was once accused of travelling around the district acting as both medical practitioner and surgeon which was detrimental to the barber's poor widow. He denied this accusation but did admit that he would help "with advice and deed" in cases of emergency especially if no doctor or surgeon were nearby, and in any case he did not believe it was forbidden.[1] He also denied that he had a pharmacy but bills which are still extant show that he supplied medicines in not inconsiderable quantities, distilled waters and must have had a laboratory of sorts. Certainly he was no ignoramus as the large collection books on medicine and distillation in Latin and German, left at the time of his death, show. In spite of all his activities his financial position was by no means secure; in 1720 he was unable to pay certain taxes and in 1729 he even had to mortgage pharmaceutical equipment and furniture.

All was duly regularised in the end. One of his sons became a parson, and another, Tobias Franck, in 1734 applied for and obtained a pharmacist's licence, whereupon Lambert turned over his pharmacy to his son, and devoted himself solely to the town's affairs, becoming mayor in 1743.



Assens Pharmacy in about 1847. The small building to the left was the spirit store

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The Swan or Svane Pharmacy, Assens in 1992

The courtyard within the Swan Pharmacy, Assens.

Although the Danish pharmacist's life may appear to English people to be enviably secure, it can be seen that many of them were far from financially secure. Thomas Bartholin, professor of anatomy at the University of Copenhagen and author of *Dispensatorium Hafniense* (1658), which was authorised for use in all the pharmacies of the country, wrote that the dispensing doctors' prescriptions alone did not provide even the necessities of life and that therefore pharmacists had to "seek their advancement by selling herbs, wine, brandy and snuff or other town business or by agriculture." It would seem therefore that the end results in England and Denmark were not so different at that time.

Notes.

1. It is known for example that in 1663 Peter Schon, pharmacist at Nakskov, practised medicine as did others where no doctor was near.

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This article has been derived from material in "A Survey of the history of pharmacy in Denmark", *Theriaca,* Copenhagen, 1960; and translations of articles in *Archiv for Pharmaci og Chemi,* viz. A. Hansen, "Haderslev's Deer Pharmacy founded 400 years", (1957); A.Hansen, "The Lion Pharmacy in Kolding" (1960) and J. Strøyberg, "Lambert Franck",(1955).

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Contents.

The Society's Mugs.

In 1993, our Society commissioned a BSHP mug in English bone china decorated with the opium poppy flower and capsule and the Society's logo based on a fifteenth century woodcut of an apothecary at work.

The poppy was drawn specially for us by the highly regarded botanical artist, Mary Bates, who works at the Royal Botanic Gardens, Edinburgh. The mug was launched at the Reading B.P.C. in 1993 and was so successful that a companion, the foxglove mug, again drawn by Mary Bates was brought out for the London B.P.C. the following year. The Society hopes to add other medicinal flowers in the future.

These unusual and elegant mugs make excellent gifts and may be purchased at the Society's meetings, the B.P.C. or by post from: BSHP., 36, York Place, Edinburgh. EH1 3HU. Price: £4.50 each, plus £1 p+p.

Photogra

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A Wartime Prescription Book.

K.D.Richardson.

The book is 7¼ inches wide, 16½ inches long and 2½ inches deep, bound in leather with marbled front pages and edge to the leaves. There is a Boots Pure Drug Co.Ltd. Stationery Department sticker (Reg.No.274) on the front board. The front cover is embossed with a black "D". A front alphabet section is used for surnames with a page reference of the prescriptions, which were contained in 597 pages. At the rear of the book are three pages of "The Form of Account" for the receipt and supply of Industrial Methylated Spirits which show that 59½ gallons were purchased during the period the book was in use, that is from 29 November 1940 to 11 October 1941. Two end pages (Nos.601 and 902) list by the week, with monthly totals, the number of new and repeat prescriptions dispensed, as well as the total takings.

The prescription book was obtained in Blackpool, Lancashire, and a loose letter within, referring to the cost of Quinidine Sulphate tablets, indicates that the book was from Boots Cash Chemists (Lancashire) Ltd., Market Street, Blackpool, Branch No.1125.

Monthly number of prescriptions and charges.

	New Prescriptions	Charge	Repeats
Nov. 1940	622	£58 17s.9½.	498
Dec. 1940	628	£55 4s.6d.	441
Jan. 1941	588	£50 19s.6d.	622
Feb. 1941	567	£58 2s.2½d.	622
Mar. 1941	574	£57 10s.3d.	581
Apr. 1941	568	£58 9s.7d.	505
May. 1941	636	£65 8s.10d.	546
Jun. 1941	538	£58 1s.1d.	478
Jul. 1941	590	£58 19s.5½d.	503
Aug. 1941	654	£67 3s.2½d.	504
Sep. 1941	600	£61 1s 5d.	582
Oct. 1941 (2 weeks only)	228	£24 4s.0½d	252

Area served.

Whilst most addresses given were those in Blackpool, a surprising number for this period were from other parts of the country. Over twenty hotels were named for patients, some possibly working for the wartime re-located ministeries. Other patients would have been on holiday or were relatives of the forces stationed locally.

Most of the towns on the Fylde coast were mentioned as would be expected, but about seventy towns from all over the country were also listed, from Oban, Alloa and Glasgow in Scotland to Lancashire, Yorkshire, North Wales, Staffordshire and the Midlands. There were many London postal codes as well as Worthing on the south coast, and surprisingly Guernsey.

Patients.

Among the more notable patients receiving medication were Lady Finlay and Judge Rees. One prescription was made out to the Palace Ballroom, and another to the Doyle Carte Opera Co., Edinburgh. The Bennett Avenue Clinic had a prescription for Cocaine and Boric Drops, and The Blind Home also had one. One script was written by a doctor at the Ministry of Pensions - "Late of St. Mary's Hospital", and another was by the "Resident M.O. of Booth Hall Hospital, Blackley, Manchester", a hospital for children. A Manchester patient had dispensed a prescription which had been written by a doctor from the Ebenezer Evangelistic and Medical Mission to the Jews, Cheetham Hill. The surgery of Vickers Armstrong Ltd., Blackpool was supplied with 2 fl. ozs of a 5% solution of Cocaine Hyd. and 50 ccs. of Soln. Morph. Sulph., 1 gr./cc.

Miss Chapman's horse (name unknown) was given powders worth 1s.9d. and consisting of:

R/ Pulv. Nux. Vom. iss oz.(Apoth.)
Pulv. Pot. Nit. iv oz.(Apoth.)
Pulv. Sem. Anisi ii drachms
Mitte Pulv. xii

Sig. One t.i.d. in provender.

A marginal note gives the quantity of each powder as 3dr.50gr.

The Armed Forces.

The main forces were Polish airmen from a Tactical Training unit - No.3S of T.T., having as sick quarters RAF, Blackpool; there were other camps in nearby towns. Polish airmen, officers and wives received prescriptions, as did A.C.1's and A.C.2's, for example A.C.2 1026832; there is also a Polish M.O.H.'s signature. One Polish officer was prescribed three dessertspoonfuls a day of Famel Syrup.

In addition material was supplied to No.60 Ambulance Train at Blackpool North station on a signature of a major in the RAMC, and to the 3rd.Div. Dental Coy. C.A.O. Also R.A. 2262 A.A. 6g R.H. Camp Reception Station at Squires Gate Camp, Lytham St. Annes received half a pint of Industrial Spirit for anti-gas paint

Prescriptions were received for officers at the RAF station at Church Fenton, others came from farther away, such as that signed by a Surgeon Lieut. RNVR, Flagstaff Dept., Devonport, and another from the RAF Station at Hucknall.

Analysis of prescriptions dispensed.

For comparison with the information described in the *Pharmaceutical Historian,* (Vol.25, March 1995), a sample of 300 preparations spread throughout the year was taken and the percentages calculated.

Mixtures and Draughts	40
Tablets, Pills and Capsules	31 (Less than 1% pills)
Powders	4
Lotions, Liniments & Embrocations	7
Ointments and Sundries	11
Eye and Nose Drops	6
Injections	1
	100

Sundries include suppositories, dressings and mouthwashes.

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Proprietary medicines.

More than 50% of the tablets and capsules were prescribed by their proprietary names. The following frequently appeared, Tabs. Gardenal, Luminal, Medinal, M.& B.693 (two scripts for these had the note "No eggs, liquorice, salt or onions"), Theogardenal, Benzedrine and Fersolate. A popular ointment base was Yardley's Brilliantine, but this came to be substituted by Paraff. Molle.

The prices of some original packs were given:
100 Tab. Fersolate = 2s.3d.; 40 Cap. Aspirin c.Amytal (Lilly) = 5s.; 30 Plastules c. Liver Ext. = 4s.; 50 Digestive Rennies = 2s.; ½ oz. Iodex = 2s.3d.; 12 Supp. Anusol = 4s.; 24 Pil. Hydrarg. gr.iv = 9d.

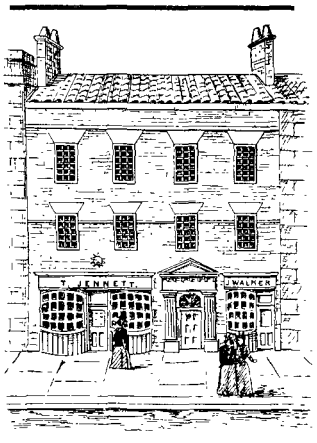
'Official' preparations.

These included: Tab. Acetyl Sal. Co (N.I.F.33, that is National Formulary for National Insurance Purposes, 2nd. Edn.1933), Lot. Picis Carb. et Plumb.(N.I.F.), Mist Tussi Nig.(N.I.F.), Linct. Diamorph.(N.I.F.), Mist Ammon. Mandelate (N.H.I.F.), Pulv. Bism. Co. (N H.I.), Mist Pot. Brom. et Valer.(N.F.), Mist Buchu et Hyosc. Alk.(N.F.), Lot. Calamin. Oleoso (N.F.), Lot. Acriflav.(N.F.), Garg. Krameria Co. (N.F.), Troch. Acid Benz.(B.P.C.)

Extemporaneous dispensing.

Most of the liquid preparations come under this heading. The Inf.Rhei Co. and Inf. Gent. Co. were freshly prepared for one prescription. Two dispensed powders had the dose of "as much powder as will cover a sixpence" in one case, and the other was "as much powder as will cover a shilling"

Other extemporaneously prepared were twelve urethral bougies of 20 grs. containing 1 gr. of opium extract; ten cachets containing Aspirin, Caffeine Sod. Benz. and Phenacetin which cost 1s.6d.; ¼gr. Belladonna pills which were massed with P. Acacia, P. Glycyrrh., Syr. Glucose and Glyc. Trag, and then varnished, the cost being 1s.6d. for 24. A troublesome ointment was compounded from Hydrarg. Subchlor. ii dr., Bism. Subnit. iss dr., Tr. Aconite m.vii, Glycerin ii dr., Ung. Sambuci (BPC) added to i oz (Apoth.). Two ounces (Apoth.) were to be made to which five drachms of Adeps Lanae Anhyd. were to be added to absorb the moisture.



John Walker's pharmacy in Stockton-on-Tees. (See p.8.)

"Opium" Weights.

A. Morson.

Very little has been written about opium weights. They originated in Burma, which conjures up visions of secluded rooms with frail Orientals lying half conscious while puffing intermittently at an opium pipe. Opium - the great reliever of pain, to some very addictive, and the source of many tales.

The facts about opium weights are more mundane. These animal-shaped bronze weights were in daily use in Burmese markets; and those of Thailand, Laos and Cambodia. This is a region which has been turbulent for centuries with semi-continuous wars; campaigns sometimes resulted in the total destruction of villages and towns, thus creating huge gaps in the region's history.

What has been discovered suggests that these weights were first used in the eleventh century, and there are references by sixteenth century travellers to animal-shaped weights. The first authentic reference however occurs in a palm-leaf manuscript written between 1750 and 1760. It appears that on his accession, a king would choose the animal he wanted used and have a master set of weights made. Individuals would then copy them, sometimes melting down old styles in order to re-use the bronze.

A set consisted of ten weights varying from 1/8th. of a *tikal*, sometimes called a *kyat*, to a hundred *tikals* which was a *viss*, a term of Indian origin, and weighing about 3½ lbs. The smallest weight, sometimes called a *mu*, was 0.07 ounces or 2 grammes. The larger weights had handles for easier lifting, a tail joining the neck or the back of the head. A full set was kept in a wooden casket which also housed a pair of portable scales.

It seems probable that these weights were used for the accurate weighing of materials used in small quantities, precious items, medicines, spices and certain foods. The weights were sometimes carried in leather bags resembling draw-string purses. Weights representing a *tikal* have changed several times over the centuries, just as there have also been variations in the range and number of weights in a set.

These weights were made by the lost wax process in which a wax model is sculptured and a mould, possibly of clay, is made round it. The wax is then heated and poured out for later re-use, then the previously weighed molten metal is poured into the mould. It is allowed to cool and then the mould broken. Finishing was by hand and included the removal of sharp corners, projections due to inaccurate mould-making, and the hollowing out of the base for weight adjustment. Lead or glass was sometimes fixed onto the bronze if added weight was needed.

Occasionally gouge marks were used, but more frequently embossing occurred to emphasise the animal's contours or for artistic reasons. Hall marks were sometimes used: a star or a number of petals being put on the bottom or the side of the base which could be circular, rectangular, hexagonal or octagonal, although the sides need not be of equal length and the corners were rounded off. The weights therefore are a little crude. However, the Burmese, like other Orientals, love to decorate even everyday tools. Elaborate cutting to indicate feathers,

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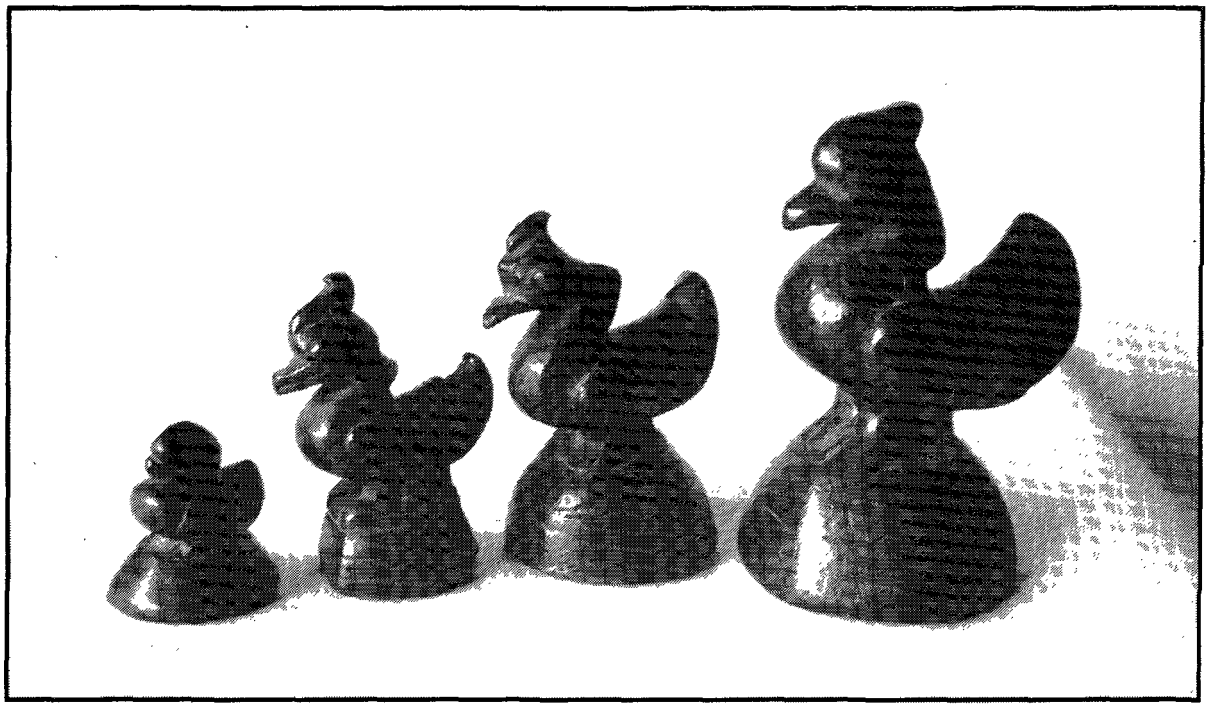

chasing or simple horizontal lines were used before the surface was smoothed. Use over a long period has produced a patina on most weights which gives them a pleasant 'feel'.

Animals were used because in Buddhist traditions they have a significant role in religious life. While elephants were used in Laos, and lions in Thailand, the Burmese seem to have used only birds. Two birds predominate, a *karawiek* or Burmese crane which has protruding eyes and a drooping beak, and a *hintha* or *havasa,* a type of *Brahmini* duck.

Seventeenth and eighteenth century weights can sometimes be identified because of a reddish colour which is due to a higher proportion of copper being used. Older weights, also made of bronze, have turned almost black with age.

In the eighteenth and nineteenth centuries many weights were made in Ara in central Burma and distributed to the provinces, sometimes even finding their way to other countries. The British occupation of Burma began in 1825, and in 1885 they introduced round and flat iron weights. The only bronze ones cast from this time are unofficial; they could sometimes be of brass, and very rarely of lead.

Opium weights have become collectors' items. There are collections in North America and Germany, and recently the British Museum has acquired a large collection but at present it is only accessible to students There are as yet many gaps in the information available and much work will have to be done before reliable conclusions about the purpose, meaning and age of opium weights can be drawn.

The illustration shows four of the plainer designs; note, they are not from the same set

1. A 35 gramme or 2 *tikal Hintha*-shaped weight which is hall-marked with a simple 6-petal design on the underside of the base. It is 7/8ths. inches high.

2 A 78 gramme or 4 *tikal Karawiek.* Three lines are incised on the base and there is a duck hallmark on one side of the unequal-sided hexagonal pedestal.

3. A 149 gramme or 10 *tikal Karawiek* without markings.

4. A 320 gramme *Hintha* duck without markings but of a reddish colour which indicates that it may be of seventeenth century manufacture. Two examples of these differ by just over ¼ ounce so probably belonging to different periods.It is a 20 *tikal* weight, so giving some indication of the size of a 100 *tikal* weight. Height 2½ inches.

References.

1. R.Braun, *Opium Gewichte/Opium weights,* Landau, Pfalzische Verlag , 1983.
2. *Arts of Asia,* Jan.- Feb.1982, vol.12, no.1, pp.73-81.

Reviews.

R.H.Ellis, *The Case Books of Dr John Snow,* London, Wellcome Institute, 1994 Pp. lvn + 633, illust £25.

The case books of Dr John Snow for the years 1848 to 1858 in the possession of the Royal College of Physicians have been edited by Dr R.H.Ellis and published as Supplement No.14 to *Medical History* The prescriptions in the manuscript have been transcribed by Dr M.P.Earles who has contributed an essay on Snow's prescribing and prepared glossaries of Latin terms and drug names.

Richard Ellis who edited the manuscript and contributed a learned introduction on John Snow was consultant anaesthetist at St. Bartholomew's Hospital and well known as a historian of anaesthesia in Britain. Sadly his untimely death occurred a few weeks after the publication of the book. Members of

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BSHP will remember the splendid paper, "Early Ether Anaesthesia: the patients" which Dr Ellis gave in April 1991 at the Greenwich Conference.

Snow made two major contributions to medicine. He demonstrated that cholera was a water-borne disease and he was a pioneer in the use of choloroform as an anaesthetic. On 7 April 1853 he was called in to administer chloroform to Queen Victoria at the birth of Prince Leopold, an event that was to dispel much of the fear and prejudice surrounding the use of anaesthesia in childbirth. In his last lecture Richard Ellis observed that letters in the Windsor collections reveal that Victoria was aware of the relief promised by the use of chloroform some time before her medical advisers permitted its use in her ninth confinement.

The case books give a valuable insight into the nature of medical practice in the mid-nineteenth century with respect to the introduction of a new medical technique. An indication of the range of information is given by the five indexes: of dentists, of medical men, of patients, of medical conditions and of places.

M.P.E.

Provenance of Registered and Imported Pharmaceutical and related Products, Malta 1900-1990, (and the nineteenth century)

Laurence V. Zerafa.

A thesis presented to the Faculty of Medicine and Surgery, University of Malta, for the degree of Master of Philosophy in 1992. Volume I (pp.619) and II (pp.237)

The aim of this thesis is to trace the commercial links in pharmaceutical items between Malta and England and other countries since the beginning of British rule in 1800 until 1990, also to establish if there is any preference for any one particular country, and whether this is based purely on commercial practice or on medical and pharmaceutical reasons. The transit trade through Malta in which drugs were imported and then re-exported, and the export of locally cultivated medicinal drugs, such as squill, bitter orange peel, elaterium, cumin seeds are not included in the analysis.

The two main indicators used were, firstly, the imports of pharmaceuticals, the statistics for which are only available from 1910 onwards, and secondly, the registration of pharmaceutical trade marks which started in 1900. The need for the protection of all 'patent' goods, not only pharmaceuticals, led several countries to develop legislation to protect trade-marks at home and abroad. Most European countries had a strictly enforced legal system of protection by the end of the nineteenth century.

The writer regards all those goods which bear a distinctive trade-mark as being 'patented' which is by no means an exact description. He does not clearly differentiate between those drugs which trade under a brand name, the host of "me-too" medicines, proprietary medicines which have been incorrectly termed patent medicines nor those to which we have loosely given the term "ethicals". The nostrums, secret remedies or purely "quack" cure-alls, many originating in Britain in the eighteenth century are not firmly separated from those of today which are patented and regulated every step of the way to the market place. The subject is a difficult and confusing one, and the thesis would have benefitted from further explanations and examples. Much of the confusion in this country arises from the succession of Acts of Parliament relating to Medicine Stamps and retail sellers' licences. The interpretation of the rules became ever more stringent and incomprehensible so that until challenged, they were applied to such products as Friars' Balsam, Godfrey's Cordial, Aromatic Spirit of Vinegar, Gowland's Lotion and Jesuit Drops, Bateman's Drops and Daffy's Elixir both of which had rival manufacturers and different formulae.

In spite of being prolix and rather repetitive, the thesis contains much interesting and new material which it is hoped will someday be published in a more concise form. He has made good use of the computer as a research tool and the whole of Chapter Five is devoted to the methodology employed, whilst volume II consists of the tables from which the whole numeric analysis is derived.

Outline of the Thesis and conclusions drawn.

'Patent' medicines from the mid-eighteenth century onwards owed much of their popularity to heavy newspaper advertising, whether by the publishers who were also 'patent' medicine vendors in a big way, or by the owners of the medicine who could be the originators, their inheritors or those who had bought the formulae. There were no greater exponents of the power of advertising than Morison, Holloway and Beecham.

It is of interest therefore, as Zerafa points out,(p.50) that Paul Cassar in his work on the importation of drugs for the pharmacy of the Holy Infirmary of Valetta during the years 1770 to 1798 found no direct mention of the acquisition of patent medicines (in the widest sense) except for Epsom Salts; it was imported from Leghorn as *Sal d'Inghilterra,* and from Marseilles as *Sal Epsom.* John Hennen, inspector of military hospitals in 1830 reported, "Malta is fortunately exempt from the disgraceful presence of any professed quack".

Matters, however, were soon to change when the British in March 1839 enacted legislation for a free press in Malta. (Previously, during the rule of the Hospitallers, the French (1798-1800) and the early days of the British, there had been only the government press.) The first advertisements for patent pharmaceuticals appeared the following year with that of a Dr E.Smith's 'Sarsaparilla Pills' for venereal diseases. Thomas Holloway's ointment and pills were as widely advertised in Malta as elsewhere; they were imported by a John Stocker, owner of a Valletta printing press. It seems that the first pharmacist to import patent medicines directly from abroad was Louis Calleja. On 23 October 1843 he advertised that he had received a consignment of 'Patent Medicines' from [rather surprisingly] Apothecaries' Hall, London. Soon he was

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marketing his own nostrums such as *Calleja's Life Pills* for liver conditions; his pharmacy in Archbishop Street was one of sixteen to be found in Valetta at that time.

Another pharmacist who began producing 'own line' products was the Englishman William Kingston, MPS (1833-1887), which were sold in his "English Pharmacy" in Theatre Street, Valletta. He compounded an expectorant, *Kingston's Compound Balm of Horehound* using locally grown *Marrubium vulgare.* Local production of such medicines was never however on a large scale The pharmacist Agostino Levanzin in 1907 complained that Maltese industries were non-existent and suggested that the distillation of essential oils from indigenous plants would be an useful occupation. The idea was never really taken up except for the production of Orange Blossom Water, called on the islands *Ilma Zahar.*

A request from the London Chamber of Commerce sent to its Maltese counterpart in 1899 asking for the names and addresses of any wholesale druggists in Malta, received the reply, "There are none in Malta of what is meant in England, by wholesale druggists. Drugs in Malta are imported by apothecaries and chemists, of which the principal are. W.Kingston, Costantino Mizzi, Alfred Gera and Roger Said, M.D.", all of Valletta.

It is probably significant that patent medicines were not advertised, nor even referred to, in the several medical journals published from 1838 to 1900. Indeed, Dr Paolo Agius in 1897 critised the local government for its lack of control over the promotion of secret remedies. He believed that many drugs on open sale, for example phenol, calomel tablets, tincture of iodine, and Gregory's Powder were too dangerous to be so easily available.

Trade-mark legislation.

To prevent unfair imitation of trade marks legal protection became necessary. France passed its first law relative to "manufactures fabriques" as early as 1803 in which trade marks could be deposited centrally and whose forgery was punishable; it seems however not to have been enforced until a new Act was passed in 1857 The first Italian law dates from 1854 In Britain the first legislative Act occurred in 1862 and was strengthened in 1875.(p.76) An international trade mark agreement was made in 1883.

Regulations dealing with commerce in Malta can be traced back to 1784 during the Grandmastership of Emmanuel de Rohan (1775-1797), but this code or *Diritto Municipale* had no provision for the protection of inventions. In 1856 the Secretary of State in London sent a circular to all governors of British colonies asking for information concerning patent rights. From Malta he received the following reply, "There is no law in these islands regulating Patent....The Power of Granting a Patent right resides in the Legislature which makes its decision in each particular case...." It was not until 1889 that the first step was taken to encourage and protect inventions, and ordinances covering patents and trade marks, based on those of England, were not introduced for another ten years.

The classification of trade marks in Malta did not occur until 1957. Pharmaceuticals come into Class 5 which includes baby foods, dressings, disinfectants, fungicides etc. (Class 10 covers surgical, dental and veterinary apparatus, artificial limbs, eyes and teeth, and sutures etc., and are not included in this analysis.) Zerafa carefully notes that the Class 5 trade marks legally registered at the Office of the Comptroller of Industrial Property in Malta are not the only trade marked or patented pharmaceuticals now or in the past available in Malta.

In order to obtain as full a picture as possible, other records were consulted such as those of foreign manufacturers, local importing agents, local medical representatives, inventories of local pharmacies, advertisements and the results of the Customs laboratory analyses.

Provenance of Class 5 trade marks registered in Malta, 1900-1990.(p.250 et seq.)

By December 1990, 3,068 Class 5 trade marks had been registered out of a total of 20,181 in all classes, or 15.2%. Registrations had been made by 34 countries of which eleven accounted for over 97% of the total. Six of the countries registered at least 150 trade marks each.

The results of the statistical analysis clearly show the pattern of preference by country for Class 5 goods. The overall result indicates an almost constant preference for English trade marks with a variable competition through the decades from those of Germany, Italy, France and the USA, and more recently from Switzerland, The Netherlands and Denmark

The maximum number of Class 5 registered in any one year was in 1976 with 126.(p.259) The 1960s and 1970s saw the introduction onto the world pharmaceutical market of numerous "ethicals", including the semi-synthetic antibiotics, steroids and psychotropics, as well as numerous insecticides. The overall increasing pattern emerging from the cumulative number of Class 5 marks shows that there were three major spurts of growth. Firstly, that between 1927 and 1931 with a figure of 176 increasing to 312 due to the large number of registered Italian trade marks; secondly, that just after the last War in 1946 until 1955 with figures rising from 481 to 736, after which there was a sudden drop in numbers,(largely because the Italian trade marks of the pre-war years were not renewed) until 1962 when, extending to 1976, the figures increased from 739 to 1,514. After this date numbers slowed down and there was even a decrease in the three years of 1987 to 1989.

Conclusions. (p.422 et seq.)

The evidence of the *Libro delle Commissioni* during the years 1781 to 1798, the final period of the Knights of St.John's rule, shows a preference for importing drugs from Marseilles, Naples, Venice, Leghorn, Florence and Palermo, reflecting both geographical proximity and cultural ties. The French connection was due to the many French knights on the island, and to France's interest in commerce between the Levant and Europe.

Commercial traffic with France and Italy was disrupted as a result of the blockade during the Napoleonic wars, consequently many British merchants living in Genoa, Leghorn etc. left those ports and established themselves in Malta for the first time. British goods, including medicinals and foreign drugs,

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started to be imported directly and regularly from England in the years 1801 to 1820, although the figures given in the "Malta Blue Books" for 1824 to 1837 indicate that Britain was not the most important source of these imports. (p.427) A leading position for British medicines, that is 'patent' medicines and excluding crude drugs, seems to have occurred in the late 1880s. Imports of medicines from Italy were still substantial but French ones had declined. By 1909 when detailed official statistics on all imported goods become available it is clear that the import of pharmaceuticals was overwhelmingly of British origin, and despite recent very considerable diminution, during all the later years of this century England has remained the major importing country. (p.431)

However German imports were becoming significant enough to cause some concern. In the years 1880 - 1913, German industrial exports grew faster and larger than those of Britain, a fact which numerous consular reports show to have been disturbing. Dr Frederick Rose, consul at Stuttgart, in his report of 1901 showed how important German pharmaceuticals were to the German economy. He wrote, "Germany produced about 70% of the world's total of quinine of which she exports about 65%" thereby earning Germany a substantial profit. Each year the trade gap widened, so that by 1903 Germany exported over 63 million marks worth of drugs and dyestuffs to the United Kingdom, but imported only about 23½ million marks worth in return.(p.454)

What comes as a surprise is that during these years, whilst in most foreign countries British manufactures were facing tough competition from both German and American goods, this was not the case in Malta. Import values for pharmaceuticals for 1884, 1889 and 1894 show that British products gained their greatest importance just when German and American ones were gaining theirs in other countries. German drugs do not seem to have enjoyed any great popularity in Malta, and American ones even less.(p.447)

Just before World War I German pharmaceutical imports into Malta equalled about 6% of the total, (and 4% of all German manufactured goods), but this position was completely lost with the coming of war, and was not won back until the mid-1920s.

In the inter-war years Italian pharmaceutical imports had their greatest popularity ever, accounting for about 16% of all such imports. Nevertheless after the last war, although by 1980 Italy had become Malta's biggest trading partner this was not the case for pharmaceuticals; these fell to between 5% and 7%, and are declining.

In 1933 pharmaceutical imports from France had risen to as high as 13% and were never lower than 6% during the period 1924 to 1940. These dropped steeply after the War and only in the 1980s rose to the present figure of 4%.

Immediately after the late war 90% of all drugs were of British origin but as competition from other countries has increased it has gone down to the present 40%. Since the early 1970s German products have remained steady at about 20% of the market; other rivals are Switzerland, Denmark and the USA. In the matter of the last country a word of caution relating to these figures must be uttered.

British trade marks post-war account for about 35% of all pharmaceutical marks, and British imports for about 40%, whilst the marks of Germany and the USA stand at around 20%. This matches the German 20% of imports by value, but for the USA there is a mis-match as their import values amount to less than 5% (p.446) Zerafa thinks this may be explained, either by American drugs not selling well inspite of strong promotion, or that they are imported from subsidiary companies established in countries such as England, in which case their import source is recorded as the United Kingdom. The latter suggestion is almost certainly the true explanation.

It can seen that this worthwhile thesis is full of stimulating information amply backed up by abundant statistical analyses shown in numerous graphs and histograms.

J.B.

The editor and the President, Anthony Morson, in earnest consultation at the Annual Conference held at Durham in April of this year.

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The Origins and Development of Pharmacy in North Eastern England.

J.Burnby.

The origins of pharmacy in England, unlike those in much of Europe, are complex and difficult to unravel. There are certainly four strands of varying degrees of importance, all of which may be seen in the counties of Northumberland and Durham.

First of all let us consider a man who is well known to us as the inventor of the match or friction light as he called it.

John Walker, (1781-1859) was born at 104, High Street, Stockton-on-Tees on 29 May 1781, grandson of the Reverend Thomas Peacock of Marton, and son of John Walker, burgess, successful grocer, draper and spirit merchant. In those days, Stockton was described as one of the handsomest towns in the north of England with a good grammar school, where we may guess John was educated.

When John came to the age of 15 (1796) he was apprenticed to a surgeon and apothecary of the town, Watson Alcock (1770-1855), who had become a member of the London Company of Surgeons some three years earlier. Alcock evaded paying the tax on the apprenticeship premium paid by young John's father, so there is no record to be found in the books of the Inland Revenue.[1] We do not know if he even completed his apprenticeship for he came to have a horror of the rough and ready surgery of the eighteenth century, by no means the first or the last man to do so.

He left Stockton and went to London for a time but how he was employed there we do not know; then for a period it is said he worked with wholesale druggists in York and Durham, though we have no proof of this. In any case he returned to his home town in 1819, and having abandoned medicine and surgery, he turned to pharmacy. At No.58 in the High Street there was a printer, stationer and bookseller, who like so many of them at that period, sold proprietary medicines on a large scale. Walker took over this aspect of Robert Christopher and Thomas Jennett's business, establishing his pharmacy next door to them at No.59.[2]

There, as his trade card states, Walker dispensed physicians' prescription, of which there would not be many, and compounded medicines for horses and cattle, besides keeping leeches. He sold bleaching agents, oxalic acid, isinglass, French chalk, nitric acid, ointments and plasters, and many another chemical or pharmaceutical preparation, and no doubt counter-prescribed.[3]

Walker was accustomed to make up and sell to the young sportsmen of the town potassium chlorate and antimony sulphide made into a paste with mucilage which exploded on percussion and so could be used as a percussion cap in sporting guns. He also sold occasionally, as his day-book shows, "dipping matches" headed with potassium chlorate which ignited when dipped in sulphuric acid. Putting these two facts together he applied a small quantity of the percussion powder to the head of a match which then ignited on gentle friction. The friction-lights were 3" long, broad and flat, and were ignited by drawing them through a piece of sandpaper which he supplied. The price was one shilling for a hundred matches and 2d. for the metal canister containing them. The first authenticated sale was to a local solicitor, John Hixon, on 7 April 1827, at a cost of 1s.2d.[4]

Thus we are able to see in the life of John Walker two of our pharmaceutical strands, his initial training with a surgeon and apothecary, and then his taking over of a printer and stationer's 'patent' medicine warehouse.

Walker by was by no means the only surgeon and apothecary who turned away from medicine to pharmacy and chemistry. Humphrey Jackson FRS, (1717-1801) is another example, and he was also a Stockton man to boot. Humphrey, the son of Thomas Jackson a man of means, was bound to Thomas Harperley, surgeon and apothecary of Stockton for five years in 1735.[5] Soon after his apprenticeship had finished he went to London and set up as a chemist in East Smithfield. In June 1744 he wrote a booklet *Virtues of Tar Water*. In those days tar water was regarded as almost a cure-all but Jackson claimed that as then made it was useless. His own preparation because it was refined along chemical principles was however effective. It can be seen from the quotations in this paper that Jackson was a man well educated in the classics.[6]

In the early 1750s he gave evidence in court concerning the composition of Dr Robert James' famous fever powder. Thanks to Jackson's analytical abilities, James won his case.[7] In 1753 he was granted a patent for fourteen years for his "Cordial Bitter Tincture for the Stomach", the major ingredient being Ext. Ginseng Co. Many gallons of his patent medicine were sold from his warehouse. He ranged widely in his interests and in 1758 wrote a remarkable book on adulterants in bread which was highly regarded by the late J.C.Drummond FRS, scientific adviser to the Ministry of Food.

Jackson was elected an FRS in the November of 1772 for discovering a method of making isinglass from British materials which was important for the brewing of 'porter', the popular beer of the day, as well as for an invention whereby naval timbers were protected from rapid decay.[8]

There were undoubtedly close connections between the surgeons and apothecaries and the chemists and druggists in the last quarter of the eighteenth century and the first of the nineteenth, but this is little known and one which is usually denied by the medical profession. Nevertheless by diligent research the point may be proved. An interesting example is to be found in the town of Hartlepool, County Durham, though the story begins over the border in Yorkshire. Another Jackson, this time a William, was a druggist in Yarm who had probably done his apprenticeship with Joseph Parkinson a druggist of Hull. From a deed dated 28 June 1836, we learn that his eldest son John, a general practitioner who had obtained his LSA in 1830 had inherited William's not inconsiderable property, including the pharmacy. John moved to Hartlepool and as his business card relates practised surgery, pharmacy and midwifery.

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In the next generation the tables were turned for John's son, Vincent William was in 1849 bound to Stephen Horner, chemist & druggist of Hartlepool, a member of the Pharmaceutical Society.[9]

The earliest reference so far found in the North-East to a pharmaceutical practitioner occurs in 1723 when John Gillespy was apprenticed for seven years to Thomas Warwick of Newcastle-upon-Tyne described as a "merchant, apothecary and chemist".[10] One can say almost certainly that he was a wholesaler, probably in the import/export trade.The next occurs seventeen years later when George Huthwaite, druggist in Gateshead, just across the River Tyne in County Durham, took Thomas Surtees as his apprentice. Huthwaite was there for many years and could charge as much as £120 for a premium.

In 1759 John Doughty was apprenticed to James Wiggins of York, then the next we hear of him was that twelve years later he and a Joseph Wiggins were in business as druggists in Newcastle. In the following years Doughty & Co. took on an apprentice every two years or so until 1787, and perhaps later, training at least ten young men. One of the apprentices in 1778, John Moor,(who had the unusually long apprenticeship of nine years) re-appears on the scene in 1791 as the partner of a man with the unusual name of Taylor Gibson. Gibson had not been trained locally but was sent in 1784 to a Henry Pryce, chemist & druggist of Whitechapel, Middlesex for five years. As is well known Newcastle had close mercantile connections with the capital. The firm was to have considerable influence in the pharmaceutical world of Newcastle and district.

As is the way with most of the early partnerships, the names change with bewildering speed, all the more so because there were several branches to the business at 15,Bigg Market. With a man called Sanderson a drysaltery firm was run; he was replaced by Thomas Beckwith who had learnt his trade with Richard Walker of Woodas, (Woodhouse), Yorkshire. Then a close tie developed with the wholesalers, Christopher & John Myers & Co. who were in Turks Head Yard off Bigg Market and listed in the 1827 Directory as chemists & druggists,although in the next directory, that of 1834, they were termed wholesale drysalters and druggists.[11]

In any case whatever the exact sequence of events the firm existed into the 20th. century, and their recipe books have been deposited in Newcastle Record Office. There is no better description of the work carried out in a large wholesale and retail pharmacy than that given by W.A.Campbell which will bring back many memories.

The chemist & druggist was consulted on all manner of problems, running from first aid to the removal of stains, from the extermination of vermin to the restoration of leatherwork. The colouring and flavouring of food also lay in his province. Many, most, had their "own lines" for stains and polishes, cosmetics such as cold cream or brilliantine and hand cream, or insect powders, to say nothing of cough mixtures, indigestion powders, diarrohoea mixtures etc. "The Taylor Gibson notebooks show... the firm made red and green inks, marking ink, French polish, baking powder, knotting varnish, violet dusting powders and curry powder.... Nor was veterinary medicine eschewed for two horse powders were produced, one containing potassium nitrate, fenugreek and flowers of sulphur, and the other consisting of ginger, aniseed, caraway, quassia and Epsom salts. Another interesting line was dye-baths, several gallons at a time, and the supply of colours to a local paint manufacturer. Pharmaceuticals were produced on a considerable scale; Laudanum was made in sixteen gallon lots and tincture of hyscyamus in three gallon ones. There was of course their own "Godfrey's" consisting of treacle, potassium tartrate, oils of aniseed and caraway and sassafras- noticeable for its absence of opium. Then there was their own Compo powder made from bayberry bark, ginger, Canada tar, capsicum and cloves. The firm had its own effervescing salts, tincture of absinthe and a sulphur lotion for ring worm."[12]

Nor was Taylor Gibson alone in this breadth of business. Alfred Hulme of Grey Street advertised his "Celebrated Northumbrian Sauce, pickling vinegar, paints, oils, colours, horse and cattle medicines, soda and Seidlitz powders, perfumes, Hume's Rifle Jet for blacking, rifle sights and patent linen markers. He was also an agent for the Himalayan Tea company."

Retail pharmacies often prepared small quantities of soda water and had agencies to supply bottled waters, as had George Currie of 19, Sandhill who "advertised Harrogate water direct from the spa and Hamilton's London Soda Water." Others like James Gilpin of 53, Pilgrim Street, a one-time partner of Anthony Clapham, an apprentice of Taylor Gibson, were engaged in mineral water manufacture on a large scale, generating his own carbon dioxide from chalk and sulphuric acid. Gilpin's "became an agent for Allsopps and Bass beers, cut their own corks, supplying them to brewers, pickle manufacturers and the wine trade."[13]

Campbell relates that Gilpin's pharmacy was later acquired by the Scotsman George Weddell. Weddell (1856-1916), born and apprenticed in Kelso, went for a short while as an assistant at Mawson & Swan before gaining further experience in London and France. Then in 1881, still only 26, Swan offered him a partnership. He developed the firm's earlier interest in water filters, and as is well known Weddell succeeded in producing a free-running table salt by adding a carefully calculated quantity of calcium phosphate. 'Cerebos' salt was so successful that he moved to Teeside where there was a better source of easily available salt. His departure in 1912 led to Mawson & Swan's amalgamation with Proctor & Clague

Thus we are able to see two more of the strands which go to make the nineteenth century pharmacist, the wholesaling druggist, and to a lesser extent, the drysalter.

Mention of George Weddell brings us on to those who have been dubbed the 'scientific pharmacists'. The first man to spring to mind is of course Sir Joseph Wilson Swan,(1828-1914). The second surviving son of Isabella Cameron and

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John Swan, a chain and anchor merchant, his formal education was short because of the fluctuating fortunes of his father.[14] He left school at the age of thirteen and went to live with his mother's uncle Commander John Kirtly R.N. at Elwick for a period before being to apprenticed to Hudson & Osbaldiston, chemists and druggists at 9, High Street, Sunderland, in 1842. Richard Osbaldiston had become a member of the newly formed Pharmaceutical Society the previous year so we can guess that he was a keen and scientifically minded pharmacist. Unfortunately both of the partners died after Swan had done only three years of his apprenticeship, but as will be seen this did not prove in anyway deleterious to his career.

In these early years he became a member of the Sunderland Athenaeum which meant he had access to a good library and heard some excellent scientific lectures. He also became a close friend of John Mawson, who perhaps at first was more interested in Swan's older sister Elizabeth than he was in the young man thirteen years his junior.

Mawson was born to Joseph and Lydia Mawson (née Bryham) at Lowther near Penrith, Westmoreland, in 1815. Also a second son he had to make his own way in the world and was duly apprenticed in a pharmacy in Penrith, quite possibly to the old established one of Jonathan and Joseph Fallowfield. His time finished, he came as an assistant to John Ritson in Sunderland. He appears to have started up on his own in that town but was soon in disastrous financial straits because he had stood guarantor to a friend whose business failed. This resulted in Mawson being declared bankrupt.

Nothing daunted he ultimately paid off the debt in full, started another pharmacy, this time in a steep narrow street in Newcastle known as The Side, married Elizabeth Swan and brought young Joseph to work with him. All of which probably occurred in 1846. The pharmacy was successful and was soon moved to 13, Mosley Street, the old shop being sold to Joseph Garnett. Swan happily settled into life in Newcastle becoming a close friend of John Pattinson and Barnard Simpson Proctor, young men of his own age who also had a consuming interest in the rapidly developing discipline of chemistry.

Barnard Proctor (born 1829) was the son and grandson of pharmacists in Newcastle. John Proctor had hailed from Dundee and in his late twenties established his pharmacy in 1768 in Newcastle at what was then called 'Head of The Side'. His son William, like Swan's apprentice master, was another 1841 member of the Pharmaceutical Society. By 1827 the flourishing pharmacy was at 20,Dean Street where it was for many years before moving to the more fashionable areas of Grey Street and Collingwood Street in the mid 1840s.[13] Barnard was to publish two textbooks on pharmacy which became standard works, and to became Reader in Pharmacy at the College of Medicine (part of the University of Durham) in Newcastle. He became a member of the Pharmaceutical Society's Council, and of the Board of Examiners, as well as president of the Chemical Society in 1882.[15]

Swan was particularly interested in electro-typing and photography and the possibilities of electric lighting. He developed a particularly successful collodion then much used in early photographic work, in 1855 a carbon filament from parchmentized paper for use in an electric light bulb, and with Mawson in 1864 devised the carbon print process. His was a brilliant career which ultimately led him far from pharmacy.

It was not unusual for men originally trained in pharmacy eventually to move into manufacturing. John Burrell was a manufacturer of mercury, Solomom Mease and his son of North Shields became chemical manufacturers at Jarrow, as did the Garbutts in Gateshead. Octavius Corder also for a short time at North Shields moved to Norwich and became involved with A.J.Caley in chocolate and mineral water production[16] Anthony Clapham who had become an apprentice of Gibson & Moor in 1793, was for a time in partnership with James Gilpin, but moved off into alkali and soap manufacture. Nine years before Tennant's Stalk was erected at the St. Rollox works in Glasgow, Clapham built a smaller but nevertheless impressive structure of 263 feet chimney at Friar's Goose to the east of Gatehead.[17] Both Joseph Crosfield who founded his soap firm at Warrington in 1815, and Hugh Lee Pattinson of the de-silverisation of lead fame, received their chemical training at Clapham's soapery.[18]

Nor should James Crossley Eno (1827-1915) be forgotten. It is thought that he was apprenticed to Joseph Garnett (1771-1861) at No.1, The Side, of the "Chemist's window" fame in St. Nicholas Cathedral, Newcastle. On completing his time he became the dispenser at Newcastle Infirmary at a salary of £60 a year. In 1852 he took over Robert Russell's pharmacy in the Groat Market where he practised not only pharmacy but dentistry as well. He made a preparation whereby a toothache sufferer could make his own fillings, also a hair restorer and a special linseed oil for poultices. In the mid-1850s he devised his Eno's Fruit Salts, a mixture of citric and tartaric acids with sodium bicarbonate, which helped by strenuous advertising proved very popular. In 1876 he moved to New Cross, London although he retained his interest in his Newcastle pharmacy until 1892.[19]

A younger man than the Swan, Proctor, Eno group was Henry Bowman Brady (1835-1891) FRS, the son of a general practitioner in Gateshead.[20] He served a four year apprenticeship with a Leeds chemist and in 1855 having passed the Society's Major examination, only 20 years old, he obtained a pharmacy in Newcastle. He was a fine microscopist, wrote many papers on the subject and became a recognised authority on the Foraminifera. In 1875 he was joined by Nicholas Henry Martin, aged 29 who had studied at the Square and been an assistant with Henry Deane of Clapham, which allowed Brady to retire the following year with the primary object of helping to write up the scientific results of the 1873-76 voyage of H.M.S Challenger. Martin was a great believer in the professional side of pharmacy, hating patent medicines and the company chemist; he contributed many papers to the Society of Chemical Industry.[21] After Burroughs Wellcome had paved the way and been registered by the Home Office on 6 September 1901 as a licence holder for animal experimentation during the development and testing of new

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therapeutic biologicals and chemicals, Brady & Martin also gained permission in 1905 after waiting a mere three weeks. A personal licence was issued to Dr William Martin, the son of Nicholas.[22]

The Pharmaceutical Society and the North-East.

There is no doubt that as the nineteenth century progressed the situation in pharmacy in England was becoming increasingly chaotic. Although by no means fully comprehensive it is true, the Universal British Directory of 1798 lists only seventeen pharmacies in the whole area.[22] By the directory of 1827 the figure had risen to 111, in that of 1834 to 141, that of 1848 to 231, and in 1865 it was 257.

How many of them could be described as real pharmacies is very difficult to determine. Many are combined occupations, such as grocers and druggists, oil, colourmen and druggists, grocers, drapers and druggists, grocers,tea-dealers and druggists, and these men we can suppose merely sold proprietary medicines, and dried herbs. If they were described as chemists & druggists, as was usually the case in the larger towns, one feels on firmer ground.

There was one example of a farrier and druggist, and another of a cattle-doctor who obviously dealt in drugs. A few were apothecaries and chemists & druggists, a favourite combination of the late eighteenth century.

Since its earliest days the Pharmaceutical Society had wished to have the supervision of the sale of all drugs but try as it might this had not proved possible, as the cry of "monopoly" immediately went up. However by the 1850s and 1860s the cases of deliberate and inadvertent poisoning had risen to such frightening proportions that it was realised on all sides that something must be done. Riding piggy-back on this demand the Poisons and Pharmacy Act of 1868 was passed. Usually hailed as a great advance for British pharmacy because in future all retail pharmacists would have to pass an examination before being admitted to the Register and so allowed to practise, it was in fact something of a hollow victory.

In the first year of the formation of the Pharmaceutical Society in 1841, 38 men of the North East became members of the Society. Two belonged to Hartlepool, two to Stockton, one each to Darlington and Berwick, three to Durham City, seven to Sunderland and no less than 23 to Newcastle, only four less than Liverpool which was top scorer for the provinces. There were seven associate members, three of whom were with Mr Gilpin in Pilgrim Street, Newcastle, and two, probably his sons, William and John Proctor with Mr Proctor. During the next four years another eight members were added, including rather interestingly, one from the small and isolated town of Middleton-in-Teesdale. Perhaps of greatest significance was that fourteen apprentices had passed the classical examination and were now duly registered apprentices.

Progress thereafter however was slow. In January 1851 there were only 61 members; some had died in the intervening years, others had left in disillusionment, but always the years saw some new faces. The Pharmacy Act of 1852 helped to stimulate recruitment. The list appearing in the *Pharmaceutical Journal* in 1856 shows that there were now 73 members, nine associates and 21 registered apprentices. No less than 25 of them had been elected in 1853, the year that John Mawson became a member. Of the 73 members, four of them, have their certificate number against their name, Edward Campbell No.323, Robert Heming No.285, Ralph Robinson No. 249, and William Scarrow, No.2. Of the nine Associates three were admitted before 1 July 1842, two had passed the Major exam. and four the Minor.[23]

Amongst this membership certain families can be picked out as staunch supporters of the Society, notably the Garbutts of Gateshead, the Waltons of Sunderland, and particularly the Proctors of Newcastle and the Ritsons of Sunderland. Joseph Swan never became an M.P.S, but was given honorary membership in 1904.

Of the 73 members on the 1856 list, seventeen of them are amongst the 800 contentious names which were added to the Society's membership as a result of the new by-laws following the Act of 1852. The Council had agreed that all chemists who had been in business for themselves before the passing of the Act and were held to be respectable people would be allowed to become members without examination, provided they applied before 1 May 1853. Some, such as Robert Durham Mease of North Shields, certainly left it to the very last minute, not collecting his supporting signatures until 30 April 1853. The inclusion of this new membership caused bitterness amongst some of the older members and led to much expensive strife.

Another seven, including such well known Newcastle names as Charles S.Gibson and Robert Spence Gilpin, were also admitted as pharmaceutical chemists by means of these by-laws but in fact none of them appear on the 1856 list of membership.

It has to be remembered that the only legal requirement until 1933 was that a practising retail pharmacist had to be on the Register, it was not essential for him to be a member of the Society. It is not by any means easy to determine the exact number of the membership at any one momemt, and just as difficult to decide who was a *bone fide* Pharmaceutical Chemist. As Holloway has pointed out the Ph.C. list published subsequent to the 1868 list includes not only those who had been members prior to the Act, BUT also those who had passed the Major examination and never taken up membership.[24] Quite a number who successfully took the Major did not apply for election to the Society. James Davidson of Newcastle passed the examination in the spring of 1851 and William Barker of Stockton two years later but neither were Society members in 1856, not even Associates.

Newcastle has one particular claim to pharmaceutical fame in that the inaugural meeting of the British Pharmaceutical Conference was held there on 2 September 1863, presided over by Henry Deane FLS of Clapham. The original suggestion that such a conference should be held in the provinces came from G.F.Schlacht of Clifton, Bristol. The first meeting was

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convened by a notice in the *Pharmaceutical Journal* of August 1863. It was linked up with the British Association meeting in Newcastle so that they could obtain return rail tickets at the single rate. About 25 pharmacists met at Baker's Hotel on the last day of the Association meeting where Professor Bentley formally proposed and Dr Attfield seconded that B.P.C.s should be held annually. That evening Richard Reynolds of Leeds read a paper on adulteration, and Barnard Proctor one on weights and measures.

Here is evidence of the scientific pharmacists at work, but I would like to tell you of a pharmacist who today we would commend highly as one who engaged in good pharmacy practice. This was Edward Hodgson of Stockton. It was reported under the heading of "Register of the sale of Opium and Laudanum in Stockton-on-Tees"in the July *Journal* of 1857 as follows: "He [Hodgson] wrote that in his place for a month he had taken the names of the buyers of opium and laudanum, and the quantity sold to them....The population of Stockton was 12,000 to 13,000 and had six chemists & druggists as well as several small shops where a few drugs were sold. Mr Hodgson was one of the six regular chemists & druggists. Wholesale orders were not included in the listing; quantities ranged for each sale from one scruple to two drachms of opium, and two drachms to two ounces of laudanum. The same names occur frequently in the list."

Table from 17 June to 16 July inclusive:

No. of purchases.	Opium	Laudanum.
292	9 ozs. 2 drams	168 ozs. 1 dram.
	Average per day	Average per day
	2½ dr.	5 ozs.4 dr.2 scruples

Hodgson had also written that "the principal part of the ...supply of opium and laudanum is obtained by children, the parents being known, but not able conveniently to fetch it themselves."

Discussion on a Bill for the sale of poisons began in the summer of 1856 but was not published until May 1857.[26] The *Journal* did not give its views on Hodgson's paper except to say that a similar register from other places would be useful for comparison.

Indeed, pharmacy as a profession was on the way to becoming mature. Some now realised that the public needed certain safeguards and that they must learn to behave responsibly. At the same time they must educate themselves and develop their scientific knowledge. That they had a desire to do so, is shown by their eagerness to establish the B.P.C. In the 22 years from 1841 to 1863, pharmacy had travelled quite some distance along the road to professionalism.

Notes and references.

1. In 1800 Watson Alcock charged Robert Fairbridge's father a premium of £100 for a five year apprenticeship.
2. D.Thomas, *Strike a Light. John Walker, 1781-1859,* Teeside Museums, 1971, pp.8-9, 14-16.
3. Ibid., pp.25-37.
4. "John Walker's Matches", *Chem.Drugg.*, 9 April 1927.
5. P.R.O., Inland Revenue Apprenticeship Records, I.R./1/15,f.127. Jackson's apprenticeship with Thomas Harperly was for 5 years and a premium of £35.
6. J.H.Appleby, "Humphrey Jackson, FRS, 1717-1801: a pioneering chemist", *Notes & Recs. of R.S. of London,* 1986, vol.40, pp.148-9.
7. J.K.Crellin, "Dr James's Fever Powder", *Trans. BSHP.,* 1974, vol.1, pp.136-41.
8. Appleby, op.cit., pp.150,147.
9. Original apprenticeship papers and advertisements etc. in the possession of the author. Horner had been a member of the Pharmaceutical Society since 1841.
10. I.R./1/48, op.cit., The apprenticeship to Thomas Warwick was for 7 years from 5 January 1722/23 and a premium of £30.
11. This was a not unusual combination, John & George Burrell of 51, Sandhill, Newcastle were listed in 1848 as both chemists & druggists, and as druggists and drysalters.
12. W.A.Campbell,"Pharmacy in old Newcastle",in D.Gardner-Medwin etal., (editors), *Medicine in Northumbria,* 1993, Newcastle, The Pybus Soc.,p.268.
13. Ibid., p.268.
14. M.E. & K.R.Swan, *Sir Joseph Wilson Swan, FRS.*, Newcastle, Oriel Press, 1968 Edn.,pp.19-24.
15. The firm was joined by Thomas Maltby Clague in 1885 who was engaged in research into lead poisoning and the illness of "phossy jaw" found amongst phosphorus workers.
16. J.Burnby, "Pharmacy and the Cocoa Bean", *Pharm. Hist.*,June 1984, vol.14, No.2, p.11.
17. W.A.Campbell, *The Chemical Industry,* Longman, 1971,p.41.
18. Ibid.,pp.71-2.
19. L.G.Matthews, *Pharmacists in the Wider World,Hounslow,* Merrell Pharmaceuticals,1981, pp.12-13.
20. Henry Brady, father of H.B.Brady, became a Licentiate of the Apothecaries' Society in 1830.
21. A. McGuckin, "Nineteenth century pharmacists of Newcastle", *Pharm. Hist.*, July 1971, vol.2 No.2,pp.5-6.
22. T.Tansy, "Commerce and Cure: conflict or concord ?" *TRPJ*,No.1, 1994, p.16.
23. From about May 1853 to June 1854, the Pharmaceutical Society issued Honorary Certificates for both the Major and Minor Examinations; during this period a high proportion of the certificates were honorary. Barnard Proctor became a registered apprentice in 1844 when fifteen and was given an honorary major certificate (No.248) in April 1853. On the same occasion Ralph Robinson and John Wortley, both of Durham, were given Major certificates by examination.
24. S.W.F.Holloway, *Royal Pharmaceutical Society of Great Britain,* London, 1991, Pharmaceutical Press, p.240.
25. *Pharm. Journ.*, 1857-58, vol.17, p.165.
26. M.P.Earles, "Jacob Bell and poisons legislation in Britain",in F.J.P.Sarmiento,(editor),*Farmacia e industrializacion,* Madrid, 1985, Spanish Soc. for History of Pharmacy, p.144.

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Contents

Diary Dates.

8 November 1995.
"Professional interactions: The London pharmaceutical community in the life and work of Michael Faraday", by Dr Frank A.J.L.James.

13 March 1996. The Foundation Lecture.
"Medicine, Muscovy and Magnetism: Mark Ridley, a contemporary of Gideon de Laune", by Dr Denis Gibbs.

19 - 21 April 1996. The Spring Conference.
To be held at the Lion Hotel, Shrewsbury.

Society Members' Activities.

Bill Jackson has been appointed Honorary Curator of the collections of artefacts at Manchester University Medical School. A number of items from his own collection are currently on display in an exhibition, "Through the Keyhole", at Quarry Bank Mill, Styal, Cheshire.

Geoff Miller of Western Australia gave the keynote address at the Australian Society of the History of Medicine Conference held on Norfolk Island. He looked at the supply of medicines to the convict transports and settlements of New South Wales from the arrival of the First Fleet at Sydney Cove in 1788 to 1868.

Nita Burnby has been involved in the production of the BBC Radio 4 programme, "John Keats. The Doctor" presented by Dr Ruth Richardson, on 22 October 1995. Three days later she gave another talk in London on John Keats in which new light was thrown on the poet's early life and connections.

Mr David Robinson of Colwyn Bay since writing his article "A Wartime Prescription Book", has received further information on the air force presence in Blackpool. A Polish officer, Mr T.Ruman, chairman of the Blackpool branch of the Polish Officers' Association, writes that the Polish contingent of the RAF was the third largest force after the British and American, and that their depot was at the Squires Gate end of Blackpool. There, courses were run for such men as wireless operators who were then posted to operational bases in England. Mr Ruman after his time in Blackpool flew bombers from Lincolnshire and later was in Italy, attached to Special Operations, and dropped agents behind enemy lines.

The Leslie Matthews Medal.

On 8 November 1995 Dr Juanita Burnby was presented with this medal for her work on the history of pharmacy by our President, Mr Anthony Morson. He said that her papers, of which there are over eighty, had altered significantly our understanding of the roles played by apothecaries and chemists & druggists in the eighteenth and nineteenth centuries . He then went on to say that it was an award requiring high academic standards and that the medal was well deserved.

When accepting the award Dr Burnby stated that she believed in the importance of studying pharmaceutical history as it formed a vital bridge between the "two cultures" of the Humanities and the Sciences. Such a link was essential in discussions with those who would be involved in negotiating pharmacy's future.

The President echoed these views when he announced the inauguration of BSHP's History Prize, which was aimed at the young. He said , "We hope that it will catch the attention of all those studying pharmacy, pharmacology, chemistry and related subjects, and that those teaching those subjects would help students to search for suitable historical matter."

The presentation was attended by the President of the Royal Pharmaceutical Society, and by representatives of the Wellcome Institute and the Societies of Apothecaries and Antiquaries.

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Reviews

L. Anderson and G. J. Higby, *The spirit of voluntarism: a legacy of commitment and contribution: the United States pharmacopeia. 1820-1995,* Rockville, MD, The United States Pharmacopeial Convention, Inc., 1995, pp. ix, 598.

G. Sonnedecker, *The Founding of the Pharmacopeia,* A series of three articles first published in *Pharmacy in History* and reprinted by the U. S. Pharmacopeial Convention Inc., 1995, pp.162.

Arrangements for the regular revision of the *United States Pharmacopeia* were established early in its history. Decennial conventions ensured a version every ten years until the 1940s when a five year cycle was introduced based on a system of continuousrevision. The work of revision was carried out by a Committee of the Philadelphia College of Physicians until the post Civil War period when there were calls for reform. When the American Medical Association rejected the suggestion that it be responsible for the work the challenge was taken up by the American Pharmaceutical Association which transformed the revision process into a nation-wide project.

Glenn Sonnedecker's articles give a detailed account of the pre-pharmacopoeial literature in America and the events leading to the publication of the first edition in 1820. The book by Anderson and Higby is an account of the proceedings leading to the production of each revision and follows the change from officinal to official as the pharmacopoeia acquired legal status in state and federal law. Gregory Higby has written the history of the U.S.P. to 1900 when it was regarded as a guide to contemporary drug therapy. Lee Anderson, who has specialised in the history of health care in the United States, has dealt with the period after 1900 when the mass production of biologicals, synthetic drugs and new dosage forms raised urgent questions regarding the purpose of the pharmacopoeia. Dealing principally with the administration and organization of the U.S.P. this book gives a clear indication of the problems involved in determining the direction and scope of the pharmacopoeia.

M.P.Earles.

R. J. Wolfe & L. F. Menczer (eds), *I awaken to glory: essays celebrating Horace Wells and the sesquicentennial of his discovery of anaesthesia,* F. A. Countway Library of Medicine, with the Historical Museum of Medicine and Dentistry, Hartford, 1994; xvii + 442 pp., illustrated, price $28.95.

This series of essays builds on the work of W. H Archer whose "Life and letters of Horace Wells..." (*Journal of the American College of Dentists,* no.2 (June 1944): 77-210) is rightly considered by one of the contributors to be hitherto the only serious biographical study of its subject. With its twelve pieces on topics as varied as iconography, posthumous recognition abroad, Wells's practice, immediate family and professional contracts, Hartford society in the 1840s and a thorough chronological review of the literature, the collection amply confirms the case for Horace Wells as the discoverer of inhalation anaesthesia. Some of the material post-dates Archer's work (or is published here for the first time - notably a transcript of one of Wells's day books) and the whole is exhaustively referenced.

The overall impression left on the reader, however, is of the continuation of a nineteenth century battle for recognition by creditably partisan supporters of Wells, rather than a historical study. With one or two notable exceptions, the tone is decidedly heroic and the text somewhat short on analysis. (The book manages, for example, to fill 442 pages without once giving a detailed account of the circumstances of Well's suicide, and considering whether this may not have had a great deal to do with subsequent lack of recognition of Well's pre-eminence). In this introduction, the editor is aware of a degree of repetition to be found in the text; indeed this is a source of frustration to the reader, who frequently finds himself meeting a lengthy quotation from precisely the same letter he encountered in a previous essay. Elsewhere, he is confronted with information which would have aided his understanding of an earlier contribution or an apparent fact which even contradicts what he has already read. (Happily, there is an excellent index). One feels the whole would have been better edited into one continuous text where the space saved on sheer repeated narrative could have been devoted to a more analytical discussion of some of the important issues which are raised but often not developed

None of these reservations about the structure of the book detract, however, from its value as a source book for the events surrounding the discovery of inhalation anaesthesia on 11 December 1844. That these should be more widely disseminated 150 years later, is a fitting tribute to the man whose imaginative leap made this possible, the dentist, Horace Wells.

C.Hillam.

C. Friedrich, *Die Apotheke von innen gesehen. Apothekerautobiographien aus zwei Jahrhunderten.* Frankfurt am Main, Govi Verlag, 1995. 144pp, ill. ISBN 3-7741-0488-3

This book contains the memoirs of fourteen pharmacists and covers a period of nearly two centuries. Each memoir starts with a portrait of the author and a biography by the editor, Dr Friedrich who has made a very attractive compilation. The reader gains a clear understanding of the work and activities in a pharmacy.

As is to be expected, the apprenticeship made a particularly deep impression on the authors. They tell us about the difficulties with various preparations, such as iron chloride, plasters, powders and syrups, the troubles during night-duty, their fear when they had broken something and their problems about pay. There is the story of the unhappy apprentice, who was preparing liquorice pastilles. He put an enormous amount of paste on the roof of the pharmacy to dry - the day being sunny and hot - and went off with his botanical box to study. In the afternoon however, he was caught in a thunderstorm and when he returned to the pharmacy he found nobody had remembered the liquorice and it had all ended in the gutter! One contribution is a memoir of the German author Erwin Rosen (1876-1923), who for two months was an apprentice in an American pharmacy. He gives a vivid description of the interior of the shop, where the sale of soda-waters and ice cream-soda was an important part of the pharmacist's work, and people even came to the pharmacy to buy their whisky. Rosen learned how to prepare "love powder": just a little bit of saccharin in a pink paper! An interesting publication in the field of history of pharmacy and culture.

A.Bierman

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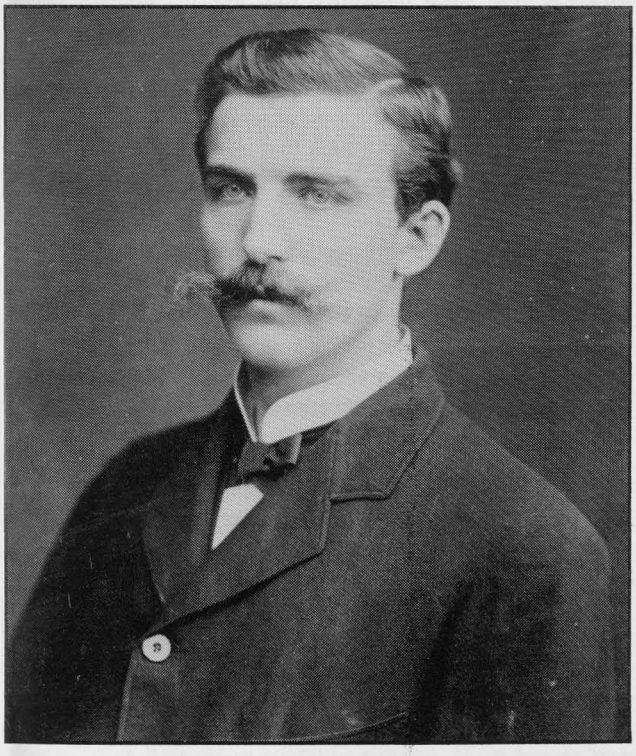
Pills, profits and propriety: the early pharmaceutical industry in Britain

Dr. E. M. Tansey

As my title suggests, the creation and development of the modern research-based pharmaceutical industry in this country was not without conflict - a conflict exacerbated by tensions between academe and commerce, between trade and the developing professional ethics and concerns of medical practitioners.

Tonight, I want to sketch some of the scientific and commercial influences on the development of the pharmaceutical industry in this country, and to describe how some of the tensions that arose were recognised, negotiated and resolved. The focus is particularly on the development of research activities in labs associated with one inspired individual, Henry Solomon Wellcome (see Figure 1).



Sir Henry Solomon Wellcome (1853-1936)in about 1880

Henry Wellcome

Wellcome arrived in Britain from his native America in 1880, in response to a letter from his compatriot Silas Mainville Burroughs. The letter, addressed to "My Dear Friend Wellcome" invited Wellcome to join in an enterprise to import and manufacture fine chemicals and medicines, "I am not the sort of a chap", Burroughs wrote, "to flatter any one but I would rather have you for a business partner in my present business than any one". The two men, both trained pharmacists and widely experienced in the pharmaceutical trade, established the firm of Burroughs, Wellcome & Co. later that year. They acquired a prestigious headquarters building, the first commercial premises in the City of London lighted entirely by electricity, and they developed a manufacturing base, originally at Wandsworth .

In 1889 they acquired the former Phoenix Mills in Dartford, which became known as the Wellcome Chemical Works after Burroughs' death.

The business rapidly acquired a solid reputation for the high and consistent quality of its products, a standing that was reflected in sales figures and commercial success. Very unusually, both Burroughs and Wellcome had considerable entrepreneurial flair, they employed trained pharmacists, as company representatives, and provided regular mailings of company information to medical practitioners. Wellcome made a particularly important contribution in 1884 by coining the word "Tabloid" as a tradename for a range of precisely tabletted and standardised medicinal products. Such medicines were beginning to perform well in the American marketplace, and the young company hoped to achieve similar success in Britain.[1]

The medicine market place at the end of the nineteenth century.

During the nineteenth century trading bases around the world expanded, and the transport of both raw materials and finished goods improved. Commerce became transformed, and nationwide press and poster advertising contributed especially to the successful rise of the branded good. The manufacturers of medicinal products were not immune from the pressures, nor unaware of the opportunities, of the market place, and products such as Friar's Balsam, Rose's Balsamick Water, Velno's Syrup, Beechams Powders, and Wards Drop and Pills all achieved prominence and commercial success.[2] Several industrial fortunes were made by men such as Thomas Beecham and Thomas Holloway, the pills and ointments of the latter building a fortune that endowed the educational establishment that still bears his name. Holloway was reckoned to be spending over £40,000 a year on advertising when he died in 1883, just three years after the establishment of Burroughs, Wellcome & Co.[3]

Those competing in the medicines market place included quacks and mountebanks at rural fairs, hawking at best ineffective concoctions, at worst adulterated or poisonous mixtures, through a wide miscellany of chemists, druggists and pharmacists to commercial manufacturers. To some extent the more disreputable end of the market acted as useful foils for the medical profession, and others, who were trying to regulate and promote ethical standards. The founders of the Pharmaceutical Society who had reformed and professionalised pharmacists provided a lead, and registered pharmacists were amongst those who clamoured for minimum standards to be applicable in the preparation of medications.[4] By the latter part of the nineteenth century there were calls from a much wider section of the medical and pharmaceutical professions for 'ethical' pharmacy, the production of safe, reliable medicines

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manufactured from known ingredients to standardised recipes and supplied through reputable pharmacists and physicians - a campaign in other words to eradicate magic potions and secret remedies.[5]

Within such a framework the products of Burroughs, Wellcome & Co. sold well, especially the *Tabloid* range which was a considerable commercial success. However some of the preparations might seem a little strange to modern eyes: *Forced March* promised to "allay hunger and prolong endurance", which it undoubtedly did, as it was a potent mixture of caffeine and cocaine. Interestingly, when the sample shown in Figure 2 was to be displayed in a museum some years later it had to be labelled "poison". By then, what had once been a respectable, accepted medicine was recognised as dangerous and damaging, a marked illustration of changing perceptions and understanding of medicinal products.

Fig. 2.

When considering the therapeutic situation at the end of the nineteenth century, it must of course be remembered that conventional medicine itself had little to offer to patients. Rational therapeutics, based on a scientific understanding of the mechanisms of action of effective drugs was a long way in the future. There were few reliable effective drugs, and such as there were - for example digitalis, mercury, opium - were used by practitioners across that broad spectrum from charlatan to consultant.

Calls at the end of the nineteenth century for controls and standards to be applied to medicinal products coincided with larger concerns about the proper and adequate promotion of science in Britain. A recurrent complaint in the scientific press was that the economic advantages of science and scientific approaches were being enthusiastically recognised abroad, but not in Britain, the "made in Germany", phenomenon. In the aftermath of the Great Exhibition of 1851, several articles appeared which contrasted German industry, where scientific expertise was well integrated into industry and commerce, with Britain where there was little support for any scientific enterprise. The situation was aptly summarised by the eminent biologist Thomas Henry Huxley, President of the Royal Society from 1881-1885, who was fond of remarking that the rewards of science in Britain were such that a man could earn praise, but not pudding.

The 1890s

However there were two important scientific developments during the latter part of the nineteenth century that profoundly influenced the creation and growth of the pharmaceutical industry, and the development of research within it. These were separate but synergistic advances in synthetic chemistry, and in biology.

In Germany, as recognised by envious British commentators, the chemical industry was flourishing; it employed a high proportion of scientifically and technically qualified staff and this had impacted especially on the creation and development of new dyes.[6] It was directly from the dye-stuff industry that many of the German and Swiss pharmaceutical companies arose, and some notable successes were achieved, Bayer for example first producing the well known analgesic aspirin in 1899. Many of these continental companies not only encouraged their own industrial research, but also provided research assistance for scientists such as Paul Ehrlich, who received support from Meister Lucius and Bruning, later part of the Hoechst group.[7]

In 1906 Ehrlich contrived the word "chemotherapy" for the first time, a word that has been used in several different contexts since then. But its creation, associating synthetic chemical substances with disease specific treatments, indicates how, at the turn of the century a research based chemical industry, incorporating therapeutic pharmaceutical products had emerged, especially in Germany. Ehrlich's experimental work on how specific drugs might counteract particular diseases rested

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strongly on his theoretical concepts of cell-cell and cell-drug interactions, concepts that were to be of fundamental importance in the development of twentieth century pharmacology.

As well as major developments in the chemical industry, important biological advances were also contributing to new medicines. These were heralded by Pasteur's germ theory, and put to practical use in 1890 when Behring and Kitasato revolutionised thinking about therapeutics by developing antitoxins against specific diseases. Their original technique involved the injection of the toxin of the diphtheria bacillus into a goat, the immune system of which manufactured specific anti-toxins to the poison. By subsequently bleeding the goat, a therapeutic serum was produced which could be used to treat patients with diphtheria. In 1894, Emil Roux refined the technique further by using horses rather than goats to raise the anti-sera, an advance which enabled an increased yield of the medicinal serum to be obtained. This stimulated research institutes and companies around the world to develop and market the new therapy.

Diphtheria anti-toxin in Britain

In the autumn of 1894 the first British successes were announced. Charles Sherrington, the Professor Superintendent of a small independent research laboratory in south London, the Brown Animal Sanatory Institution, raised enough anti-toxin to treat his own nephew, then dying of diphtheria.[8] At the same time Burroughs, Wellcome & Co proudly advertised the successful production of their anti-toxin in the pages of the medical and pharmaceutical press, emphasising both the novel nature of the venture, and the provision by the company of especially established laboratories in which this new therapeutic serum was produced.[9] According to their contemporary advertising material, the company had spent large sums of money in fitting out this properly equipped bacteriological lab, which was originally on Devonshire Street, just off Tottenham Court Road, in central London, with stabling for the requisite horses in Lisson Grove In later years the successor body to these labs. became officially known as the Wellcome Physiological Research Laboratories and were, ultimately, a major component of the Wellcome Foundation's R & D. departments.[10]

Soon after the initiation of this development, Henry Wellcome became the sole proprietor of the company In February 1895 his partner died unexpectedly, and Wellcome subsequently adopted a keen "hands-on" approach to the direction of the scientific research of his company. For example, company copies of the *British Medical Journal*, the *Lancet* and the major pharmaceutical journals were all delivered first to Wellcome himself, who clearly marked any items that caught his interest for the attention of his staff, with the clear expectation that they should not be left behind in the development of new medicines. But, in August 1896 a heavy blow was dealt to Wellcome and his laboratories. The *Lancet* published the results of one of its "Special Commissions" into the efficacy and safety of the anti-toxins then available in Britain. Their panel had examined samples from nine sources, three of which were British: the British Institute for Preventive Medicine (BIPM) in London, the Bacteriological Institute, Leicester, and Burroughs, Wellcome & Co. All three were roundly condemned by the *Lancet's* investigators for producing poor quality, and in some cases contaminated, serum. This poor home performance was compared, unfavourably, with the serum available on the Continent and once again the "made in Germany" taunt was raised in the pharmaceutical press.[11]

Henry Wellcome was horrified at the slur on the reputation of his company's products, and considered for a while that the adverse report had been deliberately distorted to castigate him as a commercial manufacturer and as a foreigner. He engaged a prominent lawyer, Fletcher Moulton QC, to advise him, and personally instigated a close inspection of the serum-production techniques in his laboratories. This rapidly revealed numerous deficiencies and confirmed the substance of the *Lancet's* allegations. Annoyed and dissatisfied with the situation he uncovered, Wellcome immediately dismissed his laboratory manager, appointed new staff, and equipped entirely new laboratories at a site in Charlotte Street, central London. The reputation of the Burroughs, Wellcome products gradually regained ground, and more importantly sales, and in 1899 Wellcome decided to expand this side of his business even further. His premises in central London were inadequate and he thus acquired a
large estate in Herne Hill, south London and from then onwards this establishment was formally entitled The Wellcome Physiological Research Laboratories. The opening of the labs. was extensively covered in the pharmaceutical press, which carried lengthy descriptions of lavishly equipped laboratories and their support facilities, one laudatory report favourably comparing the facilities for the horses used in anti-toxin production with the stables for the Queen's horses. The move to such elaborate premises also stimulated much conjecture as to Wellcome's future plans, the *Chemist and Druggist* suggesting. "There can be no doubt that there is a great future before such work as this in connection with the practice of physic, and it is gratifying to know that a firm connected with British pharmacy should be participating in what must be for several years a commercially unprofitable undertaking".[12]

The provision of stables for horses and a range of purpose-built housing for other experimental animals provide the clue to Wellcome's future intentions. He intended to extend his company's development of biological therapies, and to provide proper standardisation protocols for a wide range of therapeutic substances. Although Wellcome was highly unusual in Britain at that time, he was not alone in developing his company along these lines. Several European firms sold their serological and bacteriological products through British agents, and the American firm Parke, Davis & Co. promoted a range of products for which they used the advertising phrase "PTD": physiologically tested drugs. Wellcome clearly saw the commercial potential of such standard therapies, and wished to expand his business in this direction. However such work required the use of experimental animals because chemical

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means of assay were not available for the new, naturally derived biological medicines. The use of animals in Britain was (and is) closely regulated by law, by the 1876 Cruelty to Animals Act (supplanted in 1986 by the Animals (Scientific Procedures) Act.

Animal experiments

Many details of the 1876 Act need not concern us, but the salient features are that researchers wishing to use animals had to be individually licensed on the recommendation of two named professionals, (one the President of a Royal College or the Royal Society, the other a professor of a defined medical discipline), and premises where such experiments were to be performed had to be registered with the Home Office and subject to random unannounced inspection by the authorities. Premises thus registered at the turn of the century included laboratories associated with hospitals, medical schools or universities, and those belonging to medical corporations such as the Royal Colleges. No commercial enterprise, or premises associated with such business was then registered under the Act. Parke, Davis & Co., accommodated this problem by effectively "sub-contracting" the necessary laboratory work, initially to the Conjoint Laboratories of the Royal Colleges of Surgeons and of Physicians, and later to the Inoculation Department at St. Mary's Hospital, or by importing serum from abroad where such regulations were not in force. In 1900 Wellcome decided to apply for the Wellcome Physiological Research Laboratories to be registered under the Act, and was thus the first commercial manufacturer to make such a request. His application raised considerable difficulties and prominent opposition, especially from the Royal Colleges of Physicians, and of Surgeons. Both bodies expressed their hostility, publicly in the press and privately in committees and in correspondence with the Home Office. It emerged later that negotiations were then underway to extend the responsibilities of the Conjoint Laboratories of the Royal Colleges to running an "independent" central testing station to standardise and authorise anti-toxins from commercial producers. Rather as an afterthought, the Home Office asked the Pharmaceutical Society, for their views on the advisability of allowing Wellcome's labs to be registered, and they too reported, somewhat unexpectedly, that they considered it undesirable for such work to be carried out by commercial manufacturers.[13]

"Unexpectedly" because the Pharmaceutical Society's response was typical of those received from the medical bodies invited to comment: the objections centred on Wellcome's trade associations. The learned medical professionals scorned the possibility that high quality research could emerge from Wellcome's labs, which were, after all, part of a commercial enterprise. Medical practitioners had been formally professionalised and regulated for less than half-a-century, and were deeply anxious to distance themselves from common trade and tradesmen. It may well be that the Pharmaceutical Society, in opposing Wellcome's application, was also trying to remove itself, and its members, from the commercial marketplace, and to ally itself more closely with the formal representatives of the medical profession. Significantly, throughout all the discussions and debates there was never any suggestion from his detractors that Wellcome's laboratories, or his staff, were deficient. Indeed many commentators, including the Chief Home Office Inspector under the Cruelty to Animals Act, stressed how superbly the laboratories were "arranged and equipped for work of the highest kind". At the end of 1900 however the Home Office, strongly swayed by vociferous medical opinion, was ready to reject Wellcome's application, although concern was privately expressed within Whitehall about the adverse commercial consequences of such an action. Officials knew perfectly well that Wellcome was almost certain to take his labs. abroad, and therefore gave him extra time to supplement his request and to counter the opposition. Wellcome and his staff organised a campaign to rally support immediately. They interviewed many eminent individuals in the British medical world and a lengthy petition to the Home Office was prepared, formally requesting that The Wellcome Physiological Research Laboratories be registered. The resultant signatories include the editors of both the *British Medical Journal* and the *Lancet*, Lord Lister, the then President of the Royal Society, and surgeon to Queen Victoria; E.M. Holmes, the president of that year's Pharmaceutical Conference and many eminent professors of physiology, or medicine.

This strong public support, plus the continuing worry that an important commercial development might be lost to Britain, persuaded the Home Office, (or provided them with the convincing evidence they wanted) of the value of the labs. and the need for their registration. In September 1901 the labs were awarded formal registration under the 1876 Cruelty to Animals Act It was a momentous decision not just for Wellcome, but for the history of the pharmaceutical industry in this country, as the precedent was then created that commercial premises could be registered for animal experimentation.

The Wellcome Physiological Research Laboratories, 1901-1914.

Registration enabled Wellcome to attract qualified research staff to the laboratories in addition to those he employed in a more routine capacity to raise the serum anti-toxins, which continued to be the main function of the labs. In 1904 Wellcome engaged a young physiologist, trained in Cambridge and at University College London, Henry Dale, to develop pharmacological research. Despite his sound scientific background, Dale had no research project of his own, and thus readily accepted Wellcome's personal request that he work on ergot of rye. Wellcome's suggestion was motivated by the commercial success of Parke, Davis & Co., who were then marketing a "physiologically standardised" preparation of ergot of rye for use in obstetrics to prevent post-partum haemorrhage. Wellcome hoped that Dale would discover a similar preparation, and in supporting such work was always optimistic that "something of value" would come for his company. Indeed several of Dale's subsequent discoveries, such as the standardised ergot preparation ergotoxine, and a formulation

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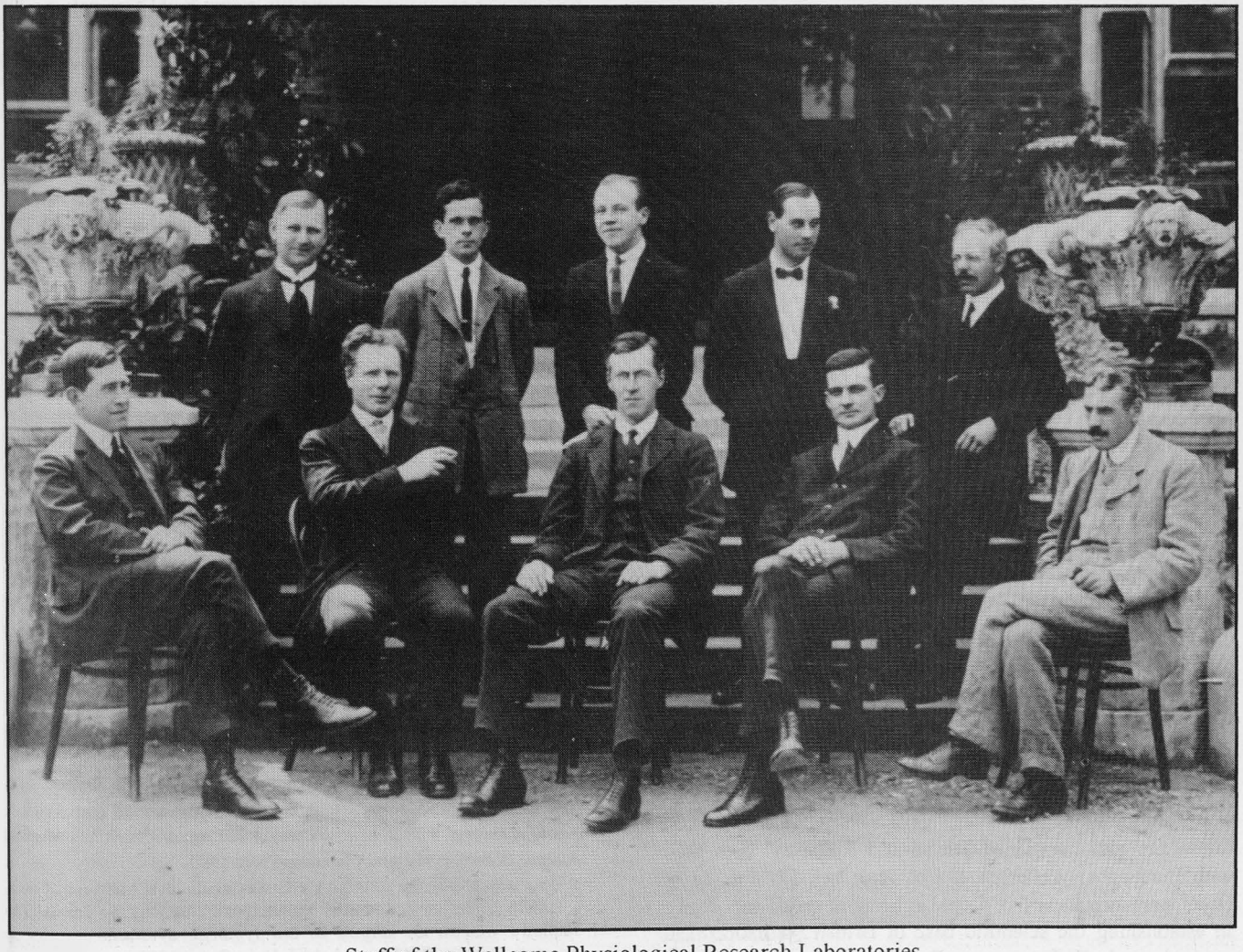
of adrenaline, marketed as hemisine, did become commercially successful company products.

However, the "something of value" for the company is also epitomised by the high scientific quality of the work emanating from the Research Labs. The major papers produced by Dale and his colleagues did, in the long run, even more for the reputation of Henry Wellcome and his pharmaceutical company. In the course of his experiments to find a better obstetric principle in ergot, Dale and his co-workers released what has been called a "treasure house of drugs" from ergot, including acetylcholine, histamine and tyramine.[14] This work provided considerable scientific credibility and achieved the highest renown. In 1914 Henry Dale, by then the Director of the Wellcome Physiological Research Laboratories, was elected to Fellowship of the Royal Society, the first person associated with the pharmaceutical industry to be so honoured. The photograph in Figure 3 shows the senior staff of the Labs. in 1914, shortly after Dale's election, and a further four of these men later became FRS.

In 1936 Dale became the first of five Nobel Laureates (to date) to be associated at some stage of their careers with the Wellcome company.[15] These accolades provide a strong indication that the scientific work performed in the Physiological Research Laboratories was not tarnished or substandard because of its close association with a pharmaceutical company. Scientific propriety had clearly been observed.

The Wellcome Laboratories and the pharmaceutical industry after 1914.

Dale himself left the Wellcome labs. in 1914 to join the Medical Research Committee, an organisation which became the MRC (Medical Research Council) after the First World War. During that war his earlier experiences, and the capabilities of the Wellcome laboratories, were of the utmost importance in developing replacements for unavailable German drugs and in providing vaccines and anti-toxins for military personnel. The Physiological Laboratories built further stables



Staff of the Wellcome Physiological Research Laboratories.
(Ewins, Buxton, Burn, Glenny, Walpole, Sudmerson, O'Brien, Dale, Barger, MacAlister.)

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to house the horses needed to raise anti-toxins for troops and at one point over 600 horses were kept in the grounds of the laboratories at Herne Hill. Wellcome also put some of his research laboratories at the disposal of the War Office, and the official MRC report formally acknowledged his considerable contribution to the war effort, and recorded their "great indebtedness" to him.[16]

The pressures of that war on the small pharmaceutical industry in Britain encouraged their subsequent growth and diversification, which continued during the interwar period. Many companies began to develop research laboratories: May & Baker, Nathan & Co (the then producers of a dried milk product called Glaxo), and British Drug Houses all applied for, and were granted, Home Office registration during the next two decades. Home Office records reveal that never again was a pharmaceutical manufacturer subjected to the level of scrutiny and interrogation that had been Wellcome's lot at the turn of the century. Applications from such firms were routinely assessed on their scientific merit, rather than their trade associations, and the development of scientific research within a pharmaceutical firm began to become a necessity rather than a novelty. Two particular discoveries, of insulin just after the first world war, and of penicillin during the second world war, provided major stimuli for the British pharmaceutical industry.

In the very first Foundation Lecture of this Society in 1978, Sir John Hanbury reminisced about the importance of insulin and its role in the growth of the pharmaceutical industry. The discovery of insulin in 1921 in Toronto by Frederick Banting and Charles Best was followed within a year, by Burroughs, Wellcome & Co's successful commercial production. British production was undertaken by agreement with the MRC, to whom the British patents had been given. Difficulties in securing an adequate supply of animal pancreas, from which the insulin was prepared, lead to the creation of the British Insulin Manufacturers, a consortium of companies which attempted to solve that problem in addition to collaborating on research, development and standardisation procedures.[17] Members of the consortium were Boots, the Wellcome Foundation, British Drug Houses and Allen & Hanburys. Recalling "some of the great days of British Insulin Manufacturers", Hanbury remembered in particular "two of the outstanding ... Sir Henry Dale and Dr Francis Carr", continuing "I shall never forget a symposium on insulin that was held in London in about 1960 and during the lunch break Sir Henry, who was by then a revered and venerable figure, was surrounded by a group of young foreign scientists to whom he was retailing a flow of anecdotes in a mixture of English and German. F.H.Carr was another man of great charm and learning who for many years had been technical director of B.D.H."

Hanbury also mentioned Trevan and Kellaway, both then with Burroughs, Wellcome & Co., and Jack Drummond of Boots, assessing these five people as being of major importance in establishing the scientific base of British pharmaceutical research, and all five, except Drummond, had started their scientific careers within the Wellcome organisation.[18]

During the second world war a similar scenario occurred in response to the discovery of penicillin. Again, British pharmaceutical companies collaborated to form the Therapeutic Research Corporation to develop penicillin production techniques. Those companies, the Wellcome Foundation (the successor body to Burroughs, Wellcome & Co., created in 1924), May & Baker, Allen & Hanburys, British Drug Houses and Glaxo, were ultimately unsuccessful in providing the necessary technological and production expertise necessary for large-scale commercial production of penicillin.[19] But the experiences of addressing the penicillin challenge resulted in the emergence, after the second world war, of a vigorous, research dependent pharmaceutical industry in Britain, and many historians have identified this as the critical factor in the industry's development in Britain. However, the fact that there was a viable research orientated industry already in existence at that time, one able to take advantage of the challenges and opportunities that arose during the 1940s, owed much to the vision and persistence several decades earlier of Henry Wellcome in promoting innovative research and overcoming widespread prejudices against his commercial associations.

Acknowledgements

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Notes & References

1. The machinery for the appropriate compressing of pills and tablets was the invention of William Brockedon, who patented in 1843 "a mode of manufacturing pills and medicated lozenges by causing the materials, when in a state of powder, granulation, or dust, by pressure in dies, so as to solidify the same", see Lise Wilkinson "William Brockedon, FRS, 1787-1854", *Notes & Records R. Soc. Lond.*, 1971, vol.26, pp. 65-72. See also L.F. Kebler "The Tablet Industry - its evolution and present status. The composition of tablets and methods of analysis", *J. Am. Pharm Ass.*, 1914, vol. 3, pp. 820-48, 937-958, 1062-1099.

2. A useful summary is Thomas Richards, *The Commodity Culture of Victorian England. Advertising Spectacle 1851-1914*, Stanford University Press, 1990, esp. Chapter 4 "The patent medicine system" ,pp. 168-204.

3. A useful account of the place of medicines in the eighteenth century market-place is R Porter, *Health for Sale; quackery in England 1660-1850*, Manchester University Press, 1989.

4. S.W.F. Holloway, *Royal Pharmaceutical Society of Great Britain 1841-1991: a political and social history*, London, Pharmaceutical Press,1991.

5. P.W.J. Bartrip, *Mirror of Medicine: A History of the British Medical Journal*, Oxford, B.M.J. and Clarendon Press, 1990

6. This was despite the fact that the first synthetic dye, Mauve, had been a British invention. A useful exposition is Anthony S. Travis *The Rainbow Makes: the origins of the synthetic dyestuffs industry in Western Europe*, Bethlehem, Lehigh Univ. Press, 1993.

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7. A useful illustrated account of the beginnings of the industry and the development of Continental firms is Vittorio A. Sironi "The birth of the pharmaceutical industry" in *Il Farmaco nei temp* [From the laboratory to industry], Parva, Farmitalia Carlo Ebba, 1989, pp. 153-202.

8. See J.C. Eccles & W.C. Gibson, *Sherrington: his life and thought*, Springer International, 1979, pp. 6-9.

9. Adverts for Burroughs, Wellcome and Co's serum, from "our own laboratories" appeared in January 1895 issues of the *British Medical Journal* and the *Lancet*.

10. A useful account of the development of the Wellcome Foundation's research capabilities in G. MacDonald, *In Pursuit of Excellence*, London, The Wellcome Foundation, 1980. See also A.R.Hall & B.A.Bembridge, *Physic and Philanthropy: a history of the Wellcome Trust, 1936-1986*. Cambridge University Press, 1986.

11. The *Lancet* also tested serum from Germany (Meister, Lucius & Bruning; Schering; and Merck), France (Institut Pasteur), Belgium (Institut Sérothérapique), and Switzerland (Vogt).

12. *Chemist & Druggist*, 11 Nov. 1899, pp. 780-781. Later descriptions of the laboratories are given in booklets produced by the Company for various trade expositions, e.g. *The Wellcome Physiological Research Laboratories*, by Walter Dowson, produced for the exposition of 1902; *The Wellcome Physiological Research Laboratories*, by H.H. Dale, for the Franco-British Exhibition, London, 1908.

13. See E.M. Tansey "The Wellcome Physiological Research Laboratories 1894-1904: The Home Office, Pharmaceutical Firms, and Animal Experiments" *Medical History*, 1989, vol.33, pp. 1-41.

14. See E.M. Tansey "Chemical neurotransmission in the autonomic nervous system: Sir Henry Dale and acetylcholine", *Clinical Autonomic Research*, 1991, vol. 1, pp. 63-72; and also W.S. Feldberg "H.H Dale, 1875-1968", *Biog. Mems. F.R.S. Lond.* vol. 16, pp. 77-174

15. The other Laureates being Sir James Black (1988), Dr Gertrude Elion (1988), Dr George Hitchins (1988) and Sir John Vane (1982).

16. Medical Research Committee *Annual Report, 1915-1916*. HMSO, London, 1916, p. 48.

17. J. Hanbury. "Pharmacy in the first half of the twentieth century: a reminiscence", *Pharmaceutical Historian*, 1978, The Foundation Lecture, vol. 8, pp. 2-3.

18. Carr, the former head of the Chemical Department at the Burroughs, Wellcome Chemical Works had worked with Dale on several ergot-associated research projects before leaving to join Boots, subsequently becoming Research Director at BDH; J.W. Trevan was Director of the Wellcome Physiological Research Laboratories from 1941-53 in succession to R.A. O'Brien, who himself succeeded Dale. C.H Kellaway, later Sir Charles, became Research Director-in-Chief of the entire Wellcome research organisation in 1944. Another important figure in the development of the research-based pharmaceutical industry in Britain was Arthur Ewins, who became research director at May & Baker, and who discovered M & B 693, and was also a former colleague of Dale's at Wellcome. (See Figure 3).

19. The success of American enterprise was of paramount importance to the successful wartime production of adequate amounts of penicillin for wartime use, see e.g. Gladys L. Hobby, *Penicillin-meeting the challenge*, New Haven & London, Yale University Press, 1985, Part 2. "Reaching for Mass Production", pp. 113-197. The taking out of patents on their procedures created bad feeling that continues to this day, see e.g. debates over monoclonal antibodies, as in E.M.Tansey & P.P.Catterall, "Monoclonal Antibodies: a witness seminar in contemporary medical history", *Medical History*, 1994, vol. 38, pp. 322-327.

Help Wanted.

Victoria Jenssen of Nova Scotia is researching into the use of narcotics and hallucinogens in Europe before World War I, and in the course of her work has found that mescal buttons (*Anhalonium lewinii*) were available from Potter & Clarke's of Artillery Lane, London. She asks if any of our members know of any records which deal with this subject.

Her address is : 1651, Whiteside Road, Cleveland, Cape Breton, Nova Scotia, Canada. BOE 1JO.

More Notes on the Saffron Plant.

Mr E.George of Westbury-on-Trym has come across an interesting document in the Bristol Record Office.

Saffron and Civet.

A deposition, on oath, before the Mayor.

Cittie of Bristoll.

Theis may signifie etc. That on this instant first day of January 1654, James Parret of Redcliffe in the County of Middlesex marriner of the age of Forty Fower yeers or there aboutes, formerly masters mate of the ship Constant, being a Private man of Warr, came personallie before me etc. and did depose that on ye xviijth day of July in ye yeere 1651 the Ship Constant aforesaid tooke as prize a certaine ship called the Island of Wearing of Amsterdam and brought her into portsmouth harbour Capt. William Hurley being then Comander of the Constant, which said Capt. Hurley after the taking the said ship came aboard her together with one Mr Mullinns Townclerke of portsmouth and one James Money serjeant, and demanded of this deponant who was then chosen master of ye Iland of Wearing, the key of the masters chest of the aforesaid prize, and this deponant opened the said chest and then ye said Capt. Hurley tooke out of the Chest one glasse of Civet inclosed in a box and one leather bag of saffron abd carried it away on shoare, since which tyme this deponant met ye said James Money at ye Swan in Redcliffe aforesaid and asked him whether the said Capt. Hurley had paid him what he owed him and the said Money then replied that he was then come to sell the Civet and saffron and there would be enough of it to make him satisfaction for his debt. And this deponant sayth that he knew not of any other Saffron or Civet aboard the said prize and doth in his conscience believe there was noe more then afore deposed.

All which etc.

John Gonninge Maior Aldworth

Reference: Bristol Record Office 04439(2) pg.10

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Penetrating to the Bosom of Nature: Humphry Davy in the Laboratory.

Professor D.M.Knight.

Humphry Davy, who lived from 1778 to 1829, was one of those who made chemistry seem the fundamental and most exciting science. It dealt with matter and the forces which modify it, including electricity; it had explained the living processes of respiration and photosynthesis, and it seemed as though the secret of life might be revealed to the chemist. The professor whose exciting lectures set Victor Frankenstein off on his unfortunate research programme was probably modelled by Mary Shelley upon Davy, whose sexy rhetoric gave us our title. Davy, a friend of S.T.Coleridge and editor of William Wordsworth, saw his vocation in high terms

> Oh, most magnificent and noble nature!
> Have I not worshipped thee with such a love
> As never mortal man before displayed?
> Adored thee in thy majestyof visible creation
> And searched into thy hidden and mysterious ways
> As Poet, as Philosopher, as Sage[9]

The chemist displayed a creative energy which entitled "him to the distinction of being made in the image of God and animated by a spark of the divine mind". In the first decade of the nineteenth century, dominated by war with France, Davy built up at the newly-founded Royal Institution in London a research laboratory supported by the subscriptions of the fashionable who flocked to his lectures Albemarle Street had to be one-way on these evenings and some knowledge of chemistry became a necessary cultural accomplishment: for women as well as men, as we see in Jane Marcet's very successful *Conversations on Chemistry* of 1807.

Davy's lectures had their authority from his work in the laboratory, where he had some seating for spectators and sometimes did his research in public: baffling onlookers by his rapidity, and his creative misuse of apparatus. But mostly the experiments were done in private, and then demonstrated in a re-vamped form before the lecture audiences. The Royal Institution has built up a formidable reputation for demonstartion experiments which work. Most chemical experiments are not very exciting for the layman. They are usually analyses, seeing what something is made of; and in the early days of the Royal Institution, these were undertaken for a fee. They demand care, and routine; and manipulative skills were developed in the laboratory to ensure repeatability and accuracy. Safety precautions seem to have been introduced in the light of experience, following explosions: chemistry has always been bangs as well as stinks.

For every experiment representing a voyage in strange seas of thought, in open-ended discovery or in crucially testing some theory, there must be and have been thousands of analyses. But fame if not fortune came to the discoverer; and Davy was such. His career in chemistry began through patronage, as everything did in those days. He was an apothecary's apprentice in Penzance, with the promise before him of a useful life as a G.P.; this had been arranged by his godfather, himself an apothecary-surgeon, after Davy's father's death Then James Watt's son Gregory contracted tuberculosis, and was recommended to spend the winter in a mild climate such as that of Cornwall; where he boarded with Davy's widowed mother. He was much the same age as Davy, and they became friends.

Watt belonged to the Lunar Society of Birmingham. Joseph Priestley, another member, had isolated numerous gases before the "Church and King" rioters in Birmingham had forced him to leave the country for America; and Thomas Beddoes, another member, had taught chemistry at Oxford until his left-wing views led to his appointment being terminated. With support from Josiah Wedgwood, another member whose son was consumptive, Beddoes set up in Clifton a Pneumatic Institution where the sick could be treated with the "factitious airs", synthetic gases, that Priestley had discovered. Watt designed apparatus for their administration. An assistant was needed and Davy agreed to break off his indentures, to the fury of his godfather, and take the new job with all its insecurities and flavour of quackery.

At Clifton his experiments were sometimes analytical; he did careful work on the composition the oxides of nitrogen. More exciting were those where like an explorer he was entering the unknown: he tried breathing the various gases. With nitrous oxide the effects were wonderful: "Nothing exists but thoughts" he cried as by-standers calmed him down. He published vivid first-hand accounts of anaesthesia, his own and those of others including Coleridge At the outset, he did not know what was going to happen and the experiment was a leap in the dark; there were dire predictions that such a compound of oxygen and nitrogen might be the very principle of contagion, a veritable "septon".

His next experiment was with carbon monoxide; fortunately there were again bystanders who brought him round, and this time he said, "I do not think I shall die." Laboratory life can be heroic.

Davy was an expert in knowing when to drop a line of inquiry when there were few further prospects of progress; and the offer nowcame in January 1801 of a post at the Royal Institution. Here he was set to investigate fertilizaers and tanning. We expect a pattern in which pure science is afterwards applied: in 1800 the technology often came first. Davy confirmed that fresh manure is more effetive than well-rotted, with a chemical rationale about ammonia being the crucial substance; and he also confirmed the best practice in tanning, the slow uptake of tannin from weak solutions. He advised too on possible substitutes for oak bark. Here the man of science was isolating active components in natural products, and providing an understanding of how crafts worked.

These areas were unpromising for further work and nobody went seriously beyond Davy's studies for a generation or more. Having gratified his employers by these researches, he moved

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back to his earlier concern with electricity. He had invented the arc lamp and worked on electric batteries at Clifton. Alessandro Volta's "pile" had been shown by the referees of his paper, William Nicholson and Anthony Carlisle, to decomposewater when the wires from the two ends were dipped into it. Davy believed that this was all thatwas happening; and that chemical affinity and electricity were manifestations of one power, as he later put it. In the autumn of 1806, after his return from holiday but before the London season and its lecture programme began, he had a chance to prove it. These experiments of a different kind· he knew what the answer must be, and he went on until he had Nature pinned down and she gave him the answer he needed. Assault and worship seemed to go closely together.

The first experiments had shown that oxygen and hydrogen came off at the positive and negative poles in the ratio of one volume to two. Closer investigations had indicated that these figures were not exact; and moreover that around the positive pole the water became acid, and that around the negative alkaline. Following some analyses, Davy switched from glass apparatus - far from inert in those days - to silver, gold and agate. He now also had at his disposal wires and spatulas· of the new metal platinum made available in coherent form by his friend and rival William Hyde Wollaston. When the water was distilled from a silver still and electrolysed in vessels of agate or gold, the acid and alkali were much less and the volumes nearer the 1:2 ratio. He found that now the acid was nitrous acid and the alkali ammonia,and attributed this to dissolved nitrogen reacting with the nascent oxygen and hydrogen. When the water was re-boiled and the experiment conducted under an atmosphere of hydrogen, the proportions were exactly 1:2, and there was no acid or alkali. Chemical affinity was indeed electrical. The *Institut* in Paris awarded Davy a prize - real recognition from the world's scientific centre

Unlike an explorer, Davy here had a goal in sight and advanced steadily towards it: this is a pattern which we are accustomed to look for in physics where crucial experiments like J.J.Thomson's on the electron confirm an idea Davy went on to isolate potassium and other metals by electrolysis Then, after proving that not all acids contain oxygen, Lavoisier's "acid generator", he went to France accompanied by his new wife and his new assistant, Michael Faraday, to pick up his prize and to fight chemical battles over iodine in the hostile capital. On his return in 1815, he was asked to do something about explosions in coal mines.

Here he did something new. There was no best practice to vindicate, though Dr William Clanny and George Stephenson were working by trial and error, controlling the air supply of lamps, towards something safe. Davy had samples of the explosive gas sent to London. Analyses showed that it was methane (it had been thought to be hydrogen) and Davy found that mixtures of this gas with air only lighted at a high temperature. First with a lamp where the incoming air and the effluent gases were cooled in narrow tubes, and then in the classic Davy lamp surrounded by wire gauze, he demonstrated in the laboratory and the lecture room that there were no explosions. The device arrived at the laboratory proved to work down the mine. Though later there were problems with improved, improved ventilation and strong draughts and with coal dust (which also causes explosions), this classic piece of applied science provided a powerful model for the rest of the nineteenth century, and a vindication of metropolitan pure science.

Within the work of a single chemist, therefore, we can see experiment being used in a number of quite different ways; and all this in a heroic time before the system of chemical instruction had been firmly put in place. Davy's successor at the Royal Institution, after his marriage meant that he no longer needed to earn an income, was W.T. Brande. He was not a lectutrer or experimenter in the mould of Davy or Faraday, but his bread and butter courses to medical students (who after 1815 had to take formal courses in chemistry) and his analyses were closer to the norm. Nevertheless, there continue to be chemists working also in the more exciting ways in which Davy was a pioneer. Chemistry, par excellence an experimental science, is no longrer usually seen as fundamental in the way it seemed to Davy and his contemporaries, and Davy's kind of rhetoric is no longerthe fashion for chemists. Nevertheless, study of the science and its history can be both illuminating and exciting.

This essay is based upon material more fully dealt with in my recent books, *Humphry Davy: Science and Power* (Blackwell, 1992; new edition forthcoming from Cambridge University Press), and *Ideas in Chemistry: a History of the Science*, (Athlone press, 1992, 2nd. edition, 1995.)

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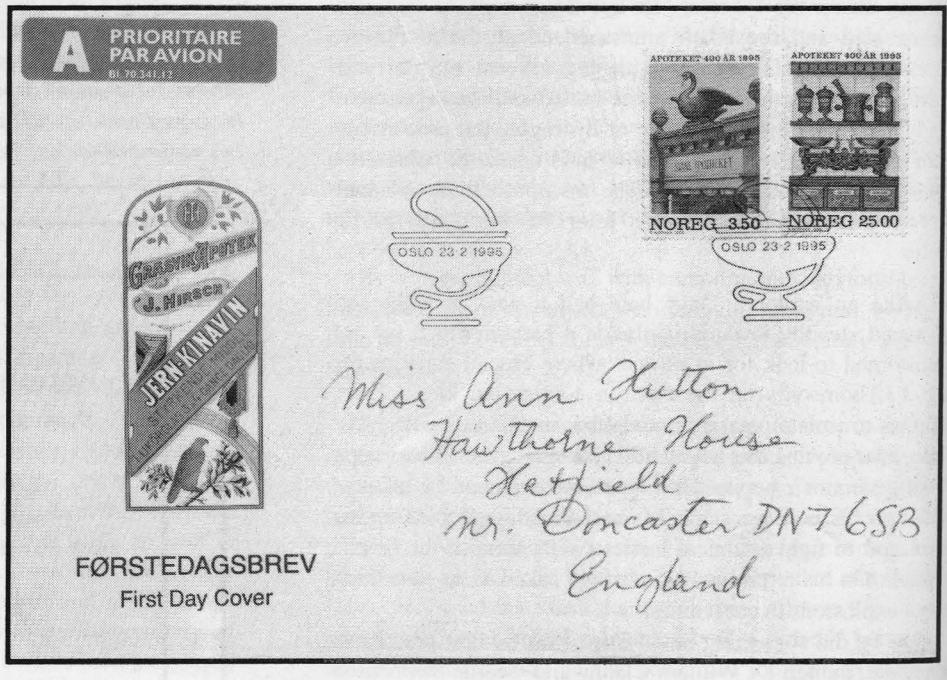
Outside the church Val de Grâce, three of the British delegates, Nita Burnby, Anne Hutton and Bill Jackson, at the International Society for the History of Pharmacy meeting held at Paris in September 1995.

This year, the Norwegian pharmacists celebrate their 400th. anniversary. On 13th. December 1595 the first privilege was given to a citizen of Bergen, stating his right to open a pharmacy. Other pharmacies soon sprung up in the larger towns.



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